DRAFT

Endangered Species Act

2003/2003-2007 IMPLEMENTATION PLAN

for the

Federal Columbia River Power System

APPENDIX: ACTION TABLE 1

Bureau of Reclamation
US Army Corps of Engineers
Bonneville Power Administration

July 2002

APPENDIX: 2003-2007 ACTION TABLES

Guide to Tables

Table 1: 2003 – 2007 Project Deliverables by Strategy and Substrategy

Table 2: 2003 – 2007 Project Deliverables by RPA Action

Guide to Action Tables

The Action Agencies have developed a database for planning and reporting of BiOp implementation measures. This database was used to produce the tables included in this Appendix. The database is currently undergoing quality review and some errors may be apparent. The Action Agencies are working together to maintain and update this database.

The tables provide detailed information about the Action Agencies' planned BiOp implementation projects. Each table shows a different grouping of the planned projects. To assist the reader, a sample of each Table is labeled below.

Table 1

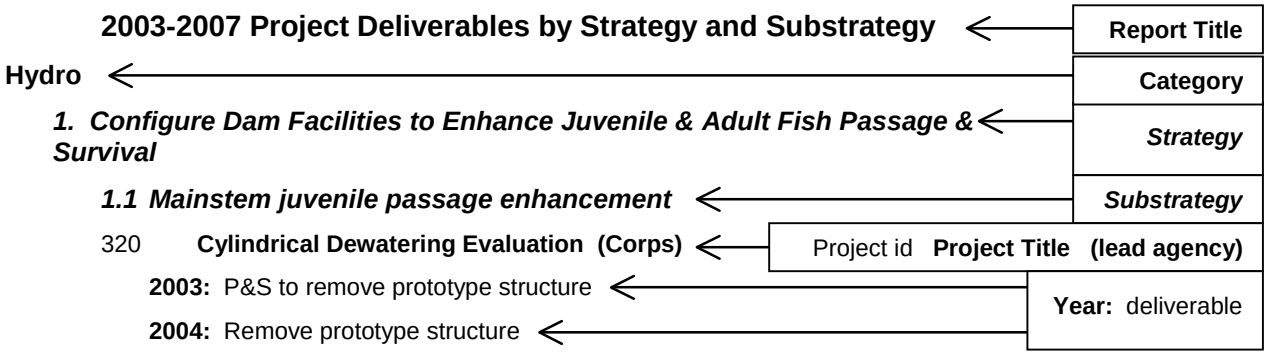

Table 2

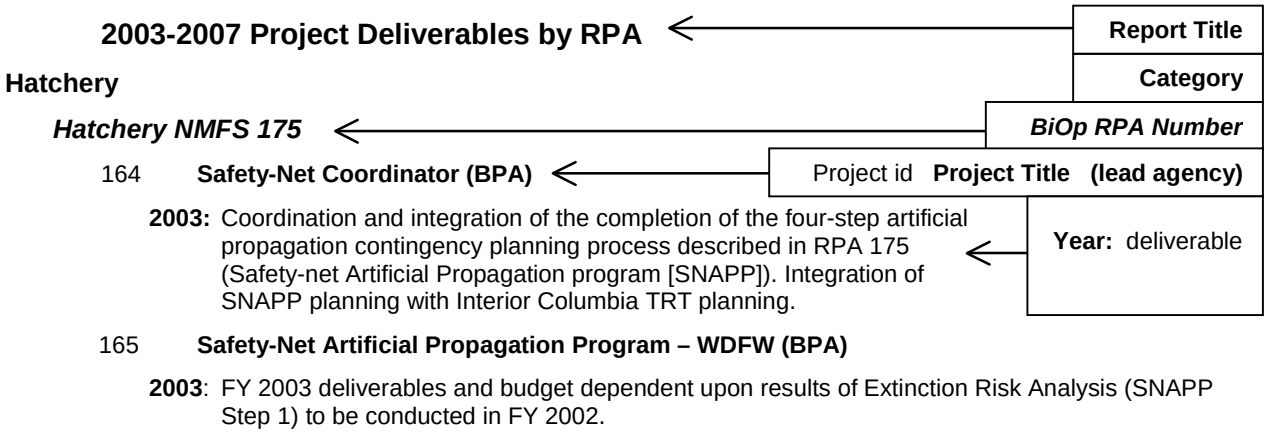

Table 1 and Table 2 do not display all of the various options for grouping the project information. Also included in the database is additional project information such as Evolutionarily Significant Unit (ESU), Province/Subbasin, and Council project number. While not included in here, this information may be provided later.

Table 1

2003 – 2007 Project Deliverables by Strategy and Substrategy

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

1.b Tributary Habitat Monitoring

84 **Salmon River Habitat Enhancement M & E (BPA)**

2003: 1. Decrease both surface and subsurface streambed sediment in Bear Valley Creek (BVC) (MF Salmon River) to less than 25% surface fines in low gradient reaches and less than 30% subsurface fines by volume. 2. Increase streambank cover and stability in BVC to bank stability greater than 80% with 75% of banks undercut. 3. Increase rearing area for anadromous fish in the Yankee Fork Salmon River (YFSR). 4. Incorporate the off-channel rearing area into a low-tech, bioenhancement facility for chinook salmon and steelhead in the YFSR. 5. Decrease both surface and subsurface streambed sediment in Herd Creek (HC) and Big Boulder Creek (BBC) (EF Salmon River) to less than 25% surface fines in low gradient reaches and less than 30% subsurface fines by volume. 6. Increase streambank cover and stability in HC and BBC to bank stability greater than 80% with 75% of banks undercut. Increase streambank cover and stability in HC and BBC. 7. Monitor habitat improvements and fish numbers.

2004: 1. Decrease both surface and subsurface streambed sediment in Bear Valley Creek (BVC) (MF Salmon River) to less than 25% surface fines in low gradient reaches and less than 30% subsurface fines by volume. 2. Increase streambank cover and stability in BVC to bank stability greater than 80% with 75% of banks undercut. 3. Increase rearing area for anadromous fish in the Yankee Fork Salmon River (YFSR). 4. Incorporate the off-channel rearing area into a low-tech, bioenhancement facility for chinook salmon and steelhead in the YFSR. 5. Decrease both surface and subsurface streambed sediment in Herd Creek (HC) and Big Boulder Creek (BBC) (EF Salmon River) to less than 25% surface fines in low gradient reaches and less than 30% subsurface fines by volume. 6. Increase streambank cover and stability in HC and BBC to bank stability greater than 80% with 75% of banks undercut. Increase streambank cover and stability in HC and BBC. 7. Monitor habitat improvements and fish numbers.

Estuary Subbasin Planning and Assessment

253 **Subbasin Planning, Statewide/Provincial/Tribal Level (BPA)**

2003: I . Statewide (Provincial)/Tribal Coordination□Council will provide support and funding for statewide/provincial/tribal coordination and project management for subbasin planning within each state.□□·□Statewide/provincial/tribal groups in ID, MT, OR, WA will perform (a.) project management functions within each state and (b.) coordination. Specific tasks are outlined in detailed budget.□□II. Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams□□·□Council will assist with establishing technical support teams within each state, and further assist with developing a strategy that enables those teams to provide technical support to provinces and subbasins.□·□Technical support team(s) in Idaho will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Montana will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Oregon will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Washington will complete an assessment through the tasks identified in attached detailed budget.

2004: Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams□□·□Council will assist with establishing technical support teams within each state, and further assist with developing a strategy that enables those teams to provide technical support to provinces and subbasins.

2005: Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

Mainstem Subbasin Planning and Assessment

253 **Subbasin Planning, Statewide/Provincial/Tribal Level (BPA)**

2003: I . Statewide (Provincial)/Tribal Coordination□Council will provide support and funding for statewide/provincial/tribal coordination and project management for subbasin planning within each state.□□·□Statewide/provincial/tribal groups in ID, MT, OR, WA will perform (a.) project management functions within each state and (b.) coordination. Specific tasks are outlined in detailed budget.□□II. Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams□□·□Council will assist with establishing technical support teams within each state, and further assist with developing a strategy that enables those teams to provide technical support to provinces and subbasins.□·□Technical support team(s) in Idaho will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Montana will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Oregon will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Washington will complete an assessment through the tasks identified in attached detailed budget.

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2005: Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams

Tributary Passage and Diversion Improvements

1 **Passage Improvement Evaluation - Phase II Screens (BPA)**

2003: Task I-A, Field Evaluations of fish screens. Task I-B, Problem identification protocol task

2004: Task I-A, Field Evaluations of fish screens. Task I-B, Problem identification protocol task

4 **Fabricate and Install Yakima Basin Phase II Fish Sreens (BPA)**

2003: Fabricate and install fish screening devices that meet State and Federal fish protection criteria.

5 **Yakima Phase II Screens - Construction (BPA)**

2003: Provide engineering designs, schedules, budgets, and construction management for individual screens - develop conceptual plans/gain landowner agreement with design; prepare designs and specifications; obtain permits and coordinate for NEPA and ESA clearances; award and supervise administration of construction contract. Construct screens by contract.

2004: Provide engineering designs, schedules, budgets, and construction management for individual screens - develop conceptual plans/gain landowner agreement with design; prepare designs and specifications; obtain permits and coordinate for NEPA and ESA clearances; award and supervise administration of construction contract. Construct screens by contract.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

6 **Operate & Maintain (O&M)Yakima Basin Phase Ii Fish Screens (BPA)**

2003: A. Routine and major maintenance of irrigation screens. B. Technical assistance to screen owners to ensure proper operation. C. Implement and maintain O&M agreements with landowners.

2004: A. Routine and major maintenance of irrigation screens. B. Technical assistance to screen owners to ensure proper operation. C. Implement and maintain O&M agreements with landowners.

2005: A. Routine and major maintenance of irrigation screens. B. Technical assistance to screen owners to ensure proper operation. C. Implement and maintain O&M agreements with landowners.

2006: A. Routine and major maintenance of irrigation screens. B. Technical assistance to screen owners to ensure proper operation. C. Implement and maintain O&M agreements with landowners.

8 **O&M Of Yakima Phase II Fish Facilities* (BPA)**

2003: A. Routine and major maintenance of irrigation screens. B. Technical assistance to screen owners to ensure proper operation. C. Implement and maintain O&M agreements with landowners.

2004: A. Routine and major maintenance of irrigation screens. B. Technical assistance to screen owners to ensure proper operation. C. Implement and maintain O&M agreements with landowners.

2005: A. Routine and major maintenance of irrigation screens. B. Technical assistance to screen owners to ensure proper operation. C. Implement and maintain O&M agreements with landowners.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

16 **Yakama Nation Yakima/Klickitat Fisheries Project (YKFP) Reestablish Safe Access into Tributaries of the Yakima Subbasin (BPA)**

2003: A report detailing the location, description and number of migration barriers and unscreened diversions in ten Yakima subbasin tributaries. This report will be provided in increments as addenda to the management plan and as surveys are completed. Identify sites and structures that provide migratory access for juvenile and adult anadromous salmonids, in all tributaries deemed economically feasible for fixing. Install irrigation diversion screens to provide safe access to tributaries, by preventing entrainment into irrigation ditches. Develop conservation easements and property acquisition on habitats with high functional value. Coordinate with lasdowners on fencing to protect riparian habitat from improper grazing. Prepare quarterly and annual reports on project efforts and results, including number of miles of tributary rearing habitat that is regained through the fishway/screening and habitat protection efforts. Update the Project Management Plan.

2004: A report detailing the location, description and number of migration barriers and unscreened diversions in ten Yakima subbasin tributaries. This report will be provided in increments as addenda to the management plan and as surveys are completed. Identify sites and structures that provide migratory access for juvenile and adult anadromous salmonids, in all tributaries deemed economically feasible for fixing. Install irrigation diversion screens to provide safe access to tributaries, by preventing entrainment into irrigation ditches. Develop conservation easements and property acquisition on habitats with high functional value. Coordinate with lasdowners on fencing to protect riparian habitat from improper grazing. Prepare quarterly and annual reports on project efforts and results, including number of miles of tributary rearing habitat that is regained through the fishway/screening and habitat protection efforts. Update the Project Management Plan.

2005: A report detailing the location, description and number of migration barriers and unscreened diversions in ten Yakima subbasin tributaries. This report will be provided in increments as addenda to the management plan and as surveys are completed. Identify sites and structures that provide migratory access for juvenile and adult anadromous salmonids, in all tributaries deemed economically feasible for fixing. Install irrigation diversion screens to provide safe access to tributaries, by preventing entrainment into irrigation ditches. Develop conservation easements and property acquisition on habitats with high functional value. Coordinate with lasdowners on fencing to protect riparian habitat from improper grazing. Prepare quarterly and annual reports on project efforts and results, including number of miles of tributary rearing habitat that is regained through the fishway/screening and habitat protection efforts. Update the Project Management Plan.

2006: A report detailing the location, description and number of migration barriers and unscreened diversions in ten Yakima subbasin tributaries. This report will be provided in increments as addenda to the management plan and as surveys are completed. Identify sites and structures that provide migratory access for juvenile and adult anadromous salmonids, in all tributaries deemed economically feasible for fixing. Install irrigation diversion screens to provide safe access to tributaries, by preventing entrainment into irrigation ditches. Develop conservation easements and property acquisition on habitats with high functional value. Coordinate with lasdowners on fencing to protect riparian habitat from improper grazing. Prepare quarterly and annual reports on project efforts and results, including number of miles of tributary rearing habitat that is regained through the fishway/screening and habitat protection efforts. Update the Project Management Plan.

19 **YKFP Big Creek Passage & Screening (BPA)**

2003: Complete installation of screens and related structures.

21 **Yakima Tributary Access and Habitat Program (Objective 1: Early Actions) (BPA)**

2003: Meet and coordinate with are landowners and irrigators to coordinate on actions. Identify prioritized sites through surveys. Organize tributary teams and work plans to address passage problems. Prepare design plans for screens. Prepare construction plans, implement contracts in coordination with landowners. Install new screens on irrigation diversions.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

39 **Umatilla Passage O&M (BPA)**

2003: 1.) Operate and maintain adult trapping and passage facilities; 2.) operate and maintain juvenile trapping and passage facilities

2004: 1.) Operate and maintain adult trapping and passage facilities; 2.) operate and maintain juvenile trapping and passage facilities

2005: 1.) Operate and maintain adult trapping and passage facilities; 2.) operate and maintain juvenile trapping and passage facilities

2006: 1.) Operate and maintain adult trapping and passage facilities; 2.) operate and maintain juvenile trapping and passage facilities

2007: 1.) Operate and maintain adult trapping and passage facilities; 2.) operate and maintain juvenile trapping and passage facilities

40 **Umatilla River Fish Passage Operations (BPA)**

2003: 1.) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions; 2.) Operate adult trapping facilities and provided return data; 3.) collect and transport broodstock for Umatilla hatchery programs; 4.) annual report.

2004: 1.) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions; 2.) Operate adult trapping facilities and provided return data; 3.) collect and transport broodstock for Umatilla hatchery programs; 4.) annual report.

2005: 1.) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions; 2.) Operate adult trapping facilities and provided return data; 3.) collect and transport broodstock for Umatilla hatchery programs; 4.) annual report.

2006: 1.) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions; 2.) Operate adult trapping facilities and provided return data; 3.) collect and transport broodstock for Umatilla hatchery programs; 4.) annual report.

2007: 1.) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions; 2.) Operate adult trapping facilities and provided return data; 3.) collect and transport broodstock for Umatilla hatchery programs; 4.) annual report.

46 **Juvenile Screens Smolt Traps on the WW River also reference 2000-033-00 (BPA)**

2003: 1) Construct Milton Ditch pipeline project; 2) Design Bergevin Williams, Old Lowden and Titus screens/ladders; 3) Provide O&M of all completed facilities

2004: 1) Design/build Hofer, Bergevin Williams, Old Lowden and Titus; 2) Provide O&M of all completed facilities

2005: 1) Provide O&M of all completed facilites

2006: 1) Provide O&M of all completed facilites

2007: 1) Provide O&M of all completed facilites

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

52 **Walla Walla River Fish Passage Operations (BPA)**

2003: 1) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions; 2) Operate adult trapping facilities and provided return data; 3) Annual report.

2004: 1) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions; 2) Operate adult trapping facilities and provided return data; 3) Annual report.

2005: 1) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions; 2) Operate adult trapping facilities and provided return data; 3) Annual report.

2006: 1) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions; 2) Operate adult trapping facilities and provided return data; 3) Annual report.

2007: 1) Operate and monitor juveniles screen sites, juvenile bypasses, and adult ladders to ensure adequate passage conditions; 2) Operate adult trapping facilities and provided return data; 3) Annual report.

54 **Walla Walla Basin Screening (BPA)**

2003: 1) Design of remainder of phase 1 and all phase 2 screens; 2) Landowner agreements and permits for all remaining screens; 3) Install all remaining screens; 4) Project construction evaluated.

81 **Custer Soil & Water Conservation District Salmon River Fish Passage Enhancement (BPA)**

2003: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

2004: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

82 **Idaho Fish Screen Improvement (BPA)**

2003: 1. Complete surveys, designs, of Idaho's Anadromous fish corridors. 2. Reduce the number of gravel push-up diversion dams by consolidation and elimination of irrigation ditches. 3. Maximize any rearing habitat in appropriate irrigation canals. 4. Reconnect streams to anadromous fish corridors. 5. Install and evaluate alternative fish screens. 6. Construction & installation of all unscreened gravity and pump intakes in Idaho's anadromous fish corridors.

2004: 1. Complete surveys, designs, of Idaho's Anadromous fish corridors. 2. Reduce the number of gravel push-up diversion dams by consolidation and elimination of irrigation ditches. 3. Maximize any rearing habitat in appropriate irrigation canals. 4. Reconnect streams to anadromous fish corridors. 5. Install and evaluate alternative fish screens. 6. Construction & installation of all unscreened gravity and pump intakes in Idaho's anadromous fish corridors.

83 **Idaho Model Watershed Habitat Improvement Project (BPA)**

2003: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

2004: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

85 **Upper Salmon River Diversion Consolidation Program (BPA)**

2003: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

2004: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

86 **Protect and Restore Lolo Creek Watershed (BPA)**

2003: 1. Restore and enhance critical riparian and in-stream habitat to reduce sedimentation and stream temperatures. 2. Restore hydrologic connectivity and fish passage within the Lolo Creek watershed. 3. Alleviate sediment input to the stream and reduce risk from sediment related mass wasting and surface erosion related to road sources.

2004: 1. Restore and enhance critical riparian and in-stream habitat to reduce sedimentation and stream temperatures. 2. Restore hydrologic connectivity and fish passage within the Lolo Creek watershed. 3. Alleviate sediment input to the stream and reduce risk from sediment related mass wasting and surface erosion related to road sources.

96 **Holistic Restoration of the Twelvemile Reach of the Salmon River near Challis, Idaho (BPA)**

2003: Develop project designs for selected restoration opportunities. Quantify benefits at the watershed scale - particularly related to temperature and fine sediments. Implementation and restoration and bank stabilization work on 12 mile section of Salmon River. Restore meadow and riparian plant communities. Conservation/access easements.

2004: Develop project designs for selected restoration opportunities. Quantify benefits at the watershed scale - particularly related to temperature and fine sediments. Implementation and restoration and bank stabilization work on 12 mile section of Salmon River. Restore meadow and riparian plant communities. Conservation/access easements.

100 **Protect & Restore Mill Creek (BPA)**

2003: 1. Restore meadow and riparian plant communities to enhance fish and wildlife habitat. 2. Return passage to inaccessible tributary habitat and alleviate sediment sources associated with culverts.

2004: 1. Restore meadow and riparian plant communities to enhance fish and wildlife habitat. 2. Return passage to inaccessible tributary habitat and alleviate sediment sources associated with culverts.

114 **Anadromous Fish Habitat & Passage in Omak Creek (BPA)**

2003: Propose the implementation of a plan to restore 40-mils of historical anadromous fish habitat (summer steelhead) by improving land management practices and conducting restoration activities that accelerate recovery of the Omak Creek watershed.

115 **Remove Barriers/Restore Instream Habitat on Chumstick Creek (BPA)**

2003: Plan and design 12 barrier removal/stream restoration projects.Implement construction of projects designed. Complete Riparian Plantings.

2004: Construction/implementation, O&M, M&E.

2005: O&M and M&E

2006: O&M and M&E

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

120 **Fish Passage on WDFW Lands in Yakima (BPA)**

2003: 1. Fish passage inventory on WDFW lands. 2. Design/engineer corrective action and complete NEPA/permits.

2004: 1. Repair or replace fish passage structures prioritized to create fish access to the maximum possible miles of stream habitat.

127 **NE Oregon Pump Screening (BPA)**

2003: 1) Design and construct 21 fish screening sites

2004: 1) Design and construct 21 fish screening sites

2005: 1) Design and construct 21 fish screening sites

2006: 1) Design and construct 21 fish screening sites

128 **Eliminate Gravel Push-up Dams in Lower North Fork John Day (BPA)**

2003: Construct 3 alternative irrigation systems eliminating the need for push up dams in the North Fork John Day River

2004: Construct 3 alternative irrigation systems eliminating the need for push up dams in the North Fork John Day River

2005: Construct 3 alternative irrigation systems eliminating the need for push up dams in the North Fork John Day River

197 **Little Sheep Creek Lg Wood Placement and Culvert Replacement (BPA)**

2003: Project complete

246 **Evaluate An Experimental Re-Introduction of Sockeye Salmon into Skaha Lake (BPA Short Title: Eval Reintroduction Sockeye Salmon Skaha Lake) (BPA)**

2003: Year 4: Objective 1 - Complete Disease Risk Assessment: 1A. -Compare the disease and infection status of fish above and below the dams, specifically, presence of whirling disease agent (Myxobolus cerebralis). 1B- Review results of field work and analysis.

2004: TBD

2005: TBD

2006: TBD

2007: TBD

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

252 **Subbasin Planning, Regional Level (BPA)**

2003: 1. Council will provide support to Regional Group by staffing and conducting meetings with regional coordination group; make reimbursements for necessary expenses for Regional Group meetings. 2. Council will establish a mechanism by which NMFS and the USFWS will review and endorse subbasin plans. Council will coordinate ESA recovery efforts and subbasin planning. 3. Council will coordinate/consult with the region's Indian Tribes. 4. Council will coordinate with resource management agencies regarding the relationship between subbasin planning and resource management planning 5. Council will coordinate with statewide/provincial/tribal coordination groups to establish appropriate coordination group(s) within each state. Conduct progress reviews; monitor funding allocations, and schedule progress on a statewide level. 6. Council will review and track progress of subbasin level work region-wide. Review statements of work, budgets and schedules for subbasin lead entities. Review subbasin allocation funding, progress reports and draft subbasin plans. Meet quarterly with statewide/provincial/tribal Coordination groups to review overall statewide progress. 7. Council will review the award of contracts with secondary entities within subbasins (co-leads or supporting organization) 8. Council will manage all subbasin and statewide/provincial/tribal level contracts. Prepare contracts and proposed amendments. Pay contractor invoices and prepare expenditure reports. Prepare and execute amendments to the master contract to reflect subcontract activities. 9. Council will initiate ISRP review and incorporate results into issue paper. 10. Council will initiate public review and incorporate results into issue paper. 11. Council will coordinate/consult with region's Indian Tribes for consistency with legal rights. 12. Council will coordinate with NMFS and USFWS for review and endorsement of subbasin plans for ESA use, where applicable. Incorporate results into issue paper. 13. Council will prepare final report and recommendation to Council for adoption of each subbasin plan. 14. Council will adopt subbasin plans into Fish and Wildlife Program, applying substantive and procedural requirements of the NW Power Act. II. Regional Technical Support Council will provide regional-level technical support basin-wide (assessment, coordination and information management) and provide out-of-subbasin assumptions. 1. Council will establish a regional technical group that will meet regularly to coordinate technical products associated for subbasin planning. 2. Council will provide staff support for regional and subbasin-level technical support. 3. Council will establish and maintain a liaison to coordinate subbasin planning with NMFS's Technical Review Teams and USFWS's bull trout recovery teams. 4. Council will provide written guidance to statewide/provincial/tribal technical support teams regarding procedures for implementing subbasin and province-level biological assessments, including sample products and descriptions of information sources and available analytical tools. 5. Council will establish and maintain an Ecosystem Diagnosis and Treatment (EDT) support function, including providing appropriate training for technical support team members in the scientific concepts and analytical tools that will be applied to subbasin assessment. 6. Council will establish and maintain a wildlife technical support function. 7. Council will maintain and enhance the Internet version of the EDT model, including EDT databases and online tools. 8. Council will establish and maintain a web-based system for accessing and transferring subbasin planning information. 9. Council will, through Bonneville, establish and maintain a system for managing and accessing spatial data over the Internet using Internet Mapping System (IMS) software. 10. Council will, through Bonneville, produce and provide basic geographic information system (GIS) products and services for subbasin planning. 11. Council will provide fish productivity and related species data to planners. 12. Council will provide library services to subbasin planning including dissemination of literature and storage of subbasin plan products.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

2004: 1. Council will provide support to Regional Group by staffing and conducting meetings with regional coordination group; make reimbursements for necessary expenses for Regional Group meetings. 2. . Council will establish a mechanism by which NMFS and the USFWS will review and endorse subbasin plans. Council will coordinate ESA recovery efforts and subbasin planning. 3. Council will coordinate/consult with the region's Indian Tribes. 4. Council will coordinate with resource management agencies regarding the relationship between subbasin planning and resource management planning 5. Council will coordinate with statewide/provincial/tribal coordination groups to establish appropriate coordination group(s) within each state. Conduct progress reviews; monitor funding allocations, and schedule progress on a statewide level. 6. Council will review and track progress of subbasin level work region-wide. Review statements of work, budgets and schedules for subbasin lead entities. Review subbasin allocation funding, progress reports and draft subbasin plans. Meet quarterly with statewide/provincial/tribal Coordination groups to review overall statewide progress. 7. Council will review the award of contracts with secondary entities within subbasins (co-leads or supporting organization) 8. Council will manage all subbasin and statewide/provincial/tribal level contracts. Prepare contracts and proposed amendments. Pay contractor invoices and prepare expenditure reports. Prepare and execute amendments to the master contract to reflect subcontract activities. 9. Council will initiate ISRP review and incorporate results into issue paper. 10. Council will initiate public review and incorporate results into issue paper. 11. Council will coordinate/consult with region's Indian Tribes for consistency with legal rights. 12. Council will coordinate with NMFS and USFWS for review and endorsement of subbasin plans for ESA use, where applicable. Incorporate results into issue paper. 13. Council will prepare final report and recommendation to Council for adoption of each subbasin plan. 14. Council will adopt subbasin plans into Fish and Wildlife Program, applying substantive and procedural requirements of the NW Power Act. II. Regional Technical Support - Council will provide regional-level technical support basin-wide (assessment, coordination and information management) and provide out-of-subbasin assumptions. 1. Council will establish a regional technical group that will meet regularly to coordinate technical products associated for subbasin planning. 2. Council will provide staff support for regional and subbasin-level technical support. 3. Council will establish and maintain a liaison to coordinate subbasin planning with NMFS's Technical Review Teams and USFWS's bull trout recovery teams. 4. Council will provide written guidance to statewide/provincial/tribal technical support teams regarding procedures for implementing subbasin and province-level biological assessments, including sample products and descriptions of information sources and available analytical tools. 5. Council will establish and maintain an Ecosystem Diagnosis and Treatment (EDT) support function, including providing appropriate training for technical support team members in the scientific concepts and analytical tools that will be applied to subbasin assessment. 6. Council will establish and maintain a wildlife technical support function. 7. Council will maintain and enhance the Internet version of the EDT model, including EDT databases and online tools. 8. Council will establish and maintain a web-based system for accessing and transferring subbasin planning information. 9. Council will, through Bonneville, establish and maintain a system for managing and accessing spatial data over the Internet using Internet Mapping System (IMS) software. 10. Council will, through Bonneville, produce and provide basic geographic information system (GIS) products and services for subbasin planning. 11. Council will provide fish productivity and related species data to planners. 12. Council will provide library services to subbasin planning including dissemination of literature and storage of subbasin plan products.

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2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

262 **Implement Tucannon River Model Watershed Plan to Restore Salmonid Habitat (Work contracted under 1999-001-00, 1999-057-00) (BPA)**

2003: Similar expected from budget projection - 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

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2006: Similar expected from budget projection - 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

268 **Gourlay Creek Dam Fish Ladder (BPA)**

2003: NA - project completed

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

271 **Improve Stream Flow and Passage for Simcoe Creek Steelhead (BPA)**

2003: Passage facility maintenance?

2004: Passage facility maintenance?

2005: Passage facility maintenance?

2006: Passage facility maintenance?

2007: Passage facility maintenance?

272 **Fabricate and Install New Huntsville Mill Fish Screen (BPA)**

2003: 1) Renovate screening facility. 2) Install new screen. 3) Revegetate site

2004: O&M/M&E (to assure screen is working properly)

2005: O&M/M&E

2006: O&M/M&E

384 **Campbell Diversions (USBR)**

2003: Preliminary designs and negotiate agreements

2004: Final designs, NEPA compliance, Sec. 7 consultation, permits

2005: Construct project

387 **Chewuch Ditch Diversion Structure (USBR)**

2005: Initiate project

2006: Complete designs, NEPA compliance, Sec. 7 consultation, permits, agreements

2007: Construct project

388 **Chumstick Diversions (USBR)**

2003: Initiate project discussions

2004: Initiate preliminary designs

2006: Finalize designs, NEPA compliance, Sec. 7 consultations, agreements and permits and construct project

2007: Finalize designs, NEPA compliance, Sec. 7 consultations, agreements and permits and construct project

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

389 **Entiat IFIM Studies (USBR)**

2003: Initiate project funding

391 **Fulton Diversion Structure (USBR)**

2003: Initiate project discussion

2005: Preliminary designs

2006: Final designs, NEPA compliance, Sec. 7 consulation, permits, agreements

2007: Construct project

392 **Gold Creek Screen and Diversion (USBR)**

2005: Initiate project

2006: Final designs, NEPA compliance, Sec. 7 consultation, permits, agreements

2007: Project construction

393 **L-13 Diversion Replacement (USBR)**

2003: Complete designs, NEPA compliance, Sec. 7 consultation, permits, construct project□□□□□

395 **L-13 Screen (USBR)**

2003: Complete screen replacement project including preliminary and engineering design, NEPA compliance, Sec. 7 consultations, permit assistance, and construction

398 **L-3 Diversion Replacement (USBR)**

2003: Construct project

399 **L-35A Diversion Replacement (USBR)**

2003: Complete designs, NEPA compliance, Sec. 7 consultation, permits, construct project

401 **L-35A Screen (USBR)**

2003: Complete screen replacement project including preliminary and engineering design, NEPA compliance, Sec. 7 consultations, permit assistance, and construction

402 **L-3A Diversion Replacement (USBR)**

2003: Construct project

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

403 **L-3A0 Diversion Replacement (USBR)**

2003: Complete designs, NEPA compliance, Sec. 7 consultation, permits, construct project

406 **L-9 Diversion Replacement (USBR)**

2003: Initiate project

2004: Complete designs, NEPA compliance, Sec. 7 consultation, permits, construct project

408 **Marracci/Washington Department of Fish and Wildlife Diverson (USBR)**

2003: Initiate project including preliminary designs, NEPA compliance, Sec. 7 consultation

2004: Final designs, permits, agreement, construction

410 **Methow Valley Irrigation District Methow River Screen (USBR)**

2003: Initiate project

2004: Final design, NEPA compliance, Sec. 7 consultation, permits, and agreements

2005: Project construction

411 **Methow Valley Irrigation District Twisp River Screen (USBR)**

2003: Initiate project coordination

2004: Preliminary and final designs, NEPA compliance, Sec. 7 consultations, permits and agreements

2005: Project construction

415 **Mission Diversions (USBR)**

2003: Initiate project discussions

2005: Initiate preliminary designs

2006: Finalize designs, NEPA compliance, Sec. 7 consultations, agreements and permits and construct project

2007: Finalize designs, NEPA compliance, Sec. 7 consultations, agreements and permits and construct project

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

416 **Methow Valley Irrigation District Methow River Diversion (USBR)**

2003: Initiate project

2005: Complete engineering designs, NEPA compliance, Sec. 7 consultation, permits, agreeements

2006: Construct project

417 **Methow Valley Irrigation District Twisp River Diversion (USBR)**

2003: Initiate project

2005: Complete engineering designs, NEPA, Sec 7 consultation, permits, agreements

2006: Construct project

420 **Panama Ditch Screen Replacement (USBR)**

2003: Initiate project

2004: Complete engineering designs, NEPA compliance, Sec. 7 consultations, permits and agreements.

2005: Project construction

421 **Strawberry Creek Complex Screen Replacement (USBR)**

2003: Initiate project including design engineering

2004: Continue design, NEPA compliance, Sec. 7 consultation, permits, agreements, construction

2005: Continue design, NEPA compliance, Sec. 7 consultation, permits, agreements, construction

2006: Continue design, NEPA compliance, Sec. 7 consultation, permits, agreements, construction

2007: Continue design, NEPA compliance, Sec. 7 consultation, permits, agreements, construction

424 **USBR Entiat Subbasin Program Management (USBR)**

2003: Initiate program and establish coordination and compliance procedures

2004: Program management and future year project identification

2005: Program management and future year project identification

2006: Program management and future year project identification

2007: Program management and future year project identification

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

425 **USBR Lemhi program management (USBR)**

2003: Continue program management; complete programmatic environmental assessment, fund specific projects.

2004: Continue program management; complete programmatic Sec. 7 consultations.

2005: Continue program management.

2006: Continue program management.

2007: Continue program management.

426 **USBR Little Salmon Subbasin Program Management (USBR)**

2004: Initiate program and establish coordination and compliance procedures

2005: Program management and future year project identification

2006: Program management and future year project identification

2007: Program management and future year project identification

427 **USBR Methow program management (USBR)**

2003: Program management, identify and fund specific projects.

2004: Program management.

2005: Program management.

2006: Program management.

2007: Program management.

428 **USBR Middle Clearwater Subbasin Program Management (USBR)**

2003: Initiate program and establish coordination and compliance procedures

2004: Program management and future year project identification

2005: Program management and future year project identification

2006: Program management and future year project identification

2007: Program management and future year project identification

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

429 **USBR Middle Fork John Day program management (USBR)**

2003: Program management.

2004: Program management.

2005: Program management.

2006: Program management.

2007: Program management.

430 **USBR North Fork John Day Program Management (USBR)**

2003: Initiate program and establish coordination and compliance procedures

2004: Program management and future year project identification

2005: Program management and future year project identification

2006: Program management and future year project identification

2007: Program management and future year project identification

431 **USBR Upper John Day Program Management (USBR)**

2003: Program management.

2004: Program management.

2005: Program management.

2006: Program management.

2007: Program management.

432 **USBR Upper Salmon program management (USBR)**

2003: Continue program management, complete programmatic NEPA

2004: Continue program management, complete programmatic Sec. 7 consultations

2005: Continue program management

2006: Continute program management

2007: Continue program management

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

433 **USBR Wenatchee Subbasin Program Management (USBR)**

2003: Program management and future year project identification

2004: Program management and future year project identification

2005: Program management and future year project identification

2006: Program management and future year project identification

2007: Program management and future year project identification

434 **Williams Creek Diversion Replacements (USBR)**

2003: Initiate project

2004: Complete designs, NEPA compliance, Sec. 7 consultation, permits, construct project

436 **Williams Creek Screens (USBR)**

2003: Initiate projects.

2004: Complete preliminary and final engineering designs, complete NEPA, complete Sec. 7 consultation, assist with permits, construction.

479 **Yakima-Klickitat Fisheries Project - Manastash Creek Fish Passage and Screening (BPA)**

2003: 1. Construct and install weirs/fishways for fish passage. 2. Construct and install screens for irrigation diversions

2004: 1. Construct and install weirs/fishways for fish passage. 2. Construct and install screens for irrigation diversions

558 **Steigerwald Lake, Camas, Washougal, WA, Section 1135 (CORPS)**

2003: Complete Feasibility, initiate P&S

2004: Complete P&S, initiate construction

2005: Complete construction

559 **SW Washington Streams Section 206 (CORPS)**

2003: Initiate feasibility study

2004: Complete plans and specs, initiate construction

2005: Complete construction

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

560 **Trout Creek Section 206 (CORPS)**

2003: Complete construction

Tributary Subbasin Planning and Assessment

17 **Ahtanum Creek Wastershed Assessment (BPA)**

2003: Maintain and protect existing high quality habitat areas (and the native populations inhabiting those areas). Restore degraded areas, and return natural ecosystem functions to the subbasin. Increase the information and knowledge needed to restore and manage fish, wildlife and their habitat. Finalize and deep update the habitat assessment plan. Prepare quarterly and annual report.

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18 **Rock Creek Watershed Assessment and Restoration project. (BPA)**

2003: Implementation of proposed actions to address findings in assessment pending review of assessment plan (not anticipated until November 2002)

2004: Implementation of proposed actions to address findings in assessment pending review of assessment plan (not anticipated until November 2002)

36 **Lower Klickitat Riparian and In-Channel Habitat Enhancement Project (BPA)**

2003: A. Acquire and manage information to facilitate identification and prioritization of sites for restoration activities. Develop application to effectively and efficiently manage habitat data. Gather existing and when needed, generate new spatial data. Initiate linkage of spatial and habitat data; Identify data gaps - identify measures to fill them. Collect streamflow data on the Little Klick. River, Swale Ck, Summit Ck, White Ck. and Trout Ck. Identify and priortize subreaches for restoration in Swale Creek canyon. Assess amount of riparian habitat lost in swale Ck headwaters in period of record. Identify sites to restore floodplain connectivity on mainstem Klickitat R betw. RM 15 and 32. B. Protect, restore, and enhance priortiy wathersheds and reaches to increase reparian, wetland, and stream habitat quality. Protect areas of existing high-quality habitat condition and prevent further deterioration degraded habitats. Enhance areas of degraded stream channel and/or habitat condition. Revegetate streambank on the Little Klickitat River nean RM 20.5. C. Monitor project site-specific and basin-wide conditions to assess habitat trends and effectiveness of restoration activities. Monitor site-specific habitat conditons. Monitor basinwide habitat conditions. D. Reports - Prepare quaterly and annual reports

2004: A. Acquire and manage information to facilitate identification and prioritization of sites for restoration activities. Develop application to effectively and efficiently manage habitat data. Gather existing and when needed, generate new spatial data. Initiate linkage of spatial and habitat data; Identify data gaps - identify measures to fill them. Collect streamflow data on the Little Klick. River, Swale Ck, Summit Ck, White Ck. and Trout Ck. Identify and priortize subreaches for restoration in Swale Creek canyon. Assess amount of riparian habitat lost in swale Ck headwaters in period of record. Identify sites to restore floodplain connectivity on mainstem Klickitat R betw. RM 15 and 32. B. Protect, restore, and enhance priortiy wathersheds and reaches to increase reparian, wetland, and stream habitat quality. Protect areas of existing high-quality habitat condition and prevent further deterioration degraded habitats. Enhance areas of degraded stream channel and/or habitat condition. Revegetate streambank on the Little Klickitat River nean RM 20.5. C. Monitor project site-specific and basin-wide conditions to assess habitat trends and effectiveness of restoration activities. Monitor site-specific habitat conditons. Monitor basinwide habitat conditions. D. Reports - Prepare quaterly and annual reports

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

79 **Upper Salmon Basin Watershed Project Administration/Implementation Support (BPA)**

2003: 1. Guide Subbasin Assessment and plan on Upper Salmon River Basin which includes the Lemhi, Pahsimeroi, East Fork, Upper Salmon and Mid-Salmon/Panther Creek Watersheds. 2. Prioritize habitat actions (projects) based on subbasin assessment and plan for Lemhi, Pahsimeroi, East Fork, Upper Salmon and Mid-Salmon/Panther Creek Watersheds. 3. Coordination of watershed issues in relation to ESA listed fish species across jurisdictional responsibilities. 4. Operation and Maintenance coordination and oversight. 5. Prepare projects for protection, restoration and complexity of fish habitat.

2004: 1. Guide Subbasin Assessment and plan on Upper Salmon River Basin which includes the Lemhi, Pahsimeroi, East Fork, Upper Salmon and Mid-Salmon/Panther Creek Watersheds. 2. Prioritize habitat actions (projects) based on subbasin assessment and plan for Lemhi, Pahsimeroi, East Fork, Upper Salmon and Mid-Salmon/Panther Creek Watersheds. 3. Coordination of watershed issues in relation to ESA listed fish species across jurisdictional responsibilities. 4. Operation and Maintenance coordination and oversight. 5. Prepare projects for protection, restoration and complexity of fish habitat.

132 **Pine Creek Ranch Acquisition (BPA)**

2003: 1) Gather baseline information to assist in monitoring and the development of a property plan 2) initiate the development of a property management plan 3) protect and enhance the natural resources. 4) property management plan is to be completed

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2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

252 **Subbasin Planning, Regional Level (BPA)**

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Habitat

1. Protect & Enhance Tributary Habitat

2004: 1. Council will provide support to Regional Group by staffing and conducting meetings with regional coordination group; make reimbursements for necessary expenses for Regional Group meetings. 2. . Council will establish a mechanism by which NMFS and the USFWS will review and endorse subbasin plans. Council will coordinate ESA recovery efforts and subbasin planning. 3. Council will coordinate/consult with the region's Indian Tribes. 4. Council will coordinate with resource management agencies regarding the relationship between subbasin planning and resource management planning 5. Council will coordinate with statewide/provincial/tribal coordination groups to establish appropriate coordination group(s) within each state. Conduct progress reviews; monitor funding allocations, and schedule progress on a statewide level. 6. Council will review and track progress of subbasin level work region-wide. Review statements of work, budgets and schedules for subbasin lead entities. Review subbasin allocation funding, progress reports and draft subbasin plans. Meet quarterly with statewide/provincial/tribal Coordination groups to review overall statewide progress. 7. Council will review the award of contracts with secondary entities within subbasins (co-leads or supporting organization) 8. Council will manage all subbasin and statewide/provincial/tribal level contracts. Prepare contracts and proposed amendments. Pay contractor invoices and prepare expenditure reports. Prepare and execute amendments to the master contract to reflect subcontract activities. 9. Council will initiate ISRP review and incorporate results into issue paper. 10. Council will initiate public review and incorporate results into issue paper. 11. Council will coordinate/consult with region's Indian Tribes for consistency with legal rights. 12. Council will coordinate with NMFS and USFWS for review and endorsement of subbasin plans for ESA use, where applicable. Incorporate results into issue paper. 13. Council will prepare final report and recommendation to Council for adoption of each subbasin plan. 14. Council will adopt subbasin plans into Fish and Wildlife Program, applying substantive and procedural requirements of the NW Power Act. II. Regional Technical Support - Council will provide regional-level technical support basin-wide (assessment, coordination and information management) and provide out-of-subbasin assumptions. 1. Council will establish a regional technical group that will meet regularly to coordinate technical products associated for subbasin planning. 2. Council will provide staff support for regional and subbasin-level technical support. 3. Council will establish and maintain a liaison to coordinate subbasin planning with NMFS's Technical Review Teams and USFWS's bull trout recovery teams. 4. Council will provide written guidance to statewide/provincial/tribal technical support teams regarding procedures for implementing subbasin and province-level biological assessments, including sample products and descriptions of information sources and available analytical tools. 5. Council will establish and maintain an Ecosystem Diagnosis and Treatment (EDT) support function, including providing appropriate training for technical support team members in the scientific concepts and analytical tools that will be applied to subbasin assessment. 6. Council will establish and maintain a wildlife technical support function. 7. Council will maintain and enhance the Internet version of the EDT model, including EDT databases and online tools. 8. Council will establish and maintain a web-based system for accessing and transferring subbasin planning information. 9. Council will, through Bonneville, establish and maintain a system for managing and accessing spatial data over the Internet using Internet Mapping System (IMS) software. 10. Council will, through Bonneville, produce and provide basic geographic information system (GIS) products and services for subbasin planning. 11. Council will provide fish productivity and related species data to planners. 12. Council will provide library services to subbasin planning including dissemination of literature and storage of subbasin plan products.

2005: 1. Council will provide support to Regional Group by staffing and conducting meetings with regional coordination group; make reimbursements for necessary expenses for Regional Group meetings. 2. Council will coordinate with statewide/provincial/tribal coordination groups to establish appropriate coordination group(s) within each state. Conduct progress reviews; monitor funding allocations, and schedule progress on a statewide level. 3. Council will adopt subbasin plans into Fish and Wildlife Program, applying substantive and procedural requirements of the NW Power Act. II. Regional Technical Support - Council will provide regional-level technical support basin-wide (assessment, coordination and information management) and provide out-of-subbasin assumptions. 1. Council will provide staff support for regional and subbasin-level technical support. 2. Council will establish and maintain a liaison to coordinate subbasin planning with NMFS's Technical Review Teams and USFWS's bull trout recovery teams. 3. Council will establish and maintain an Ecosystem Diagnosis and Treatment (EDT) support function, including providing appropriate training for technical support team members in the scientific concepts and analytical tools that will be applied to subbasin assessment. 4. Council will establish and maintain a wildlife technical support function. 5. Council will maintain and enhance the Internet version of the EDT model, including EDT databases and online tools. 6. Council will establish and maintain a web-based system for accessing and transferring subbasin planning information. 7. Council will, through Bonneville, establish and maintain a system for managing and accessing spatial data over the Internet using Internet Mapping System (IMS) software. 8. Council will, through Bonneville, produce and provide basic geographic information system (GIS) products and services for subbasin planning. 9. Council will provide fish productivity and related species data to planners. 10. Council will provide library services to subbasin planning including dissemination of literature and storage of subbasin plan products.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

253 **Subbasin Planning, Statewide/Provincial/Tribal Level (BPA)**

2003: I . Statewide (Provincial)/Tribal Coordination□Council will provide support and funding for statewide/provincial/tribal coordination and project management for subbasin planning within each state.□□·□Statewide/provincial/tribal groups in ID, MT, OR, WA will perform (a.) project management functions within each state and (b.) coordination. Specific tasks are outlined in detailed budget.□□II. Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams□□·□Council will assist with establishing technical support teams within each state, and further assist with developing a strategy that enables those teams to provide technical support to provinces and subbasins.□·□Technical support team(s) in Idaho will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Montana will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Oregon will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Washington will complete an assessment through the tasks identified in attached detailed budget.

2004: Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams□□·□Council will assist with establishing technical support teams within each state, and further assist with developing a strategy that enables those teams to provide technical support to provinces and subbasins.

2005: Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams

254 **Subbasin Planning, Subbasin Level (BPA)**

2003: Council will administer contracts for subbasin level planning. □□Council will contract with subbasin lead entities to develop subbasin level plans.

2004: Council will administer contracts for subbasin level planning. □□Council will contract with subbasin lead entities to develop subbasin level plans.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

255 **Umatilla River Anadromous Fish Habitat Enhancement Project (BPA)**

2003: Similar expected from budget projection. 1) Develop projects and cost shares with landowners, and local, state and federal agencies, 2) Secure riparian easements on and off reservation, 3) Fulfill permitting requirements: NEPA, cultural surveys, Biological Assessments, etc. as required. 4) Maintain or continue implementation of instream habitat enhancement projects - a) Station 29, b) Hartman. 5) Maintain riparian corridor fencing. 6) Construct new riparian corridor fencing. Harvey - 2 mi, Simenton - 0.5 mi, Wolfe 1.0 mi. 7) Develop off-stream watering sources for livestock and wildlife - a) S&M Farms (last 75%); b) 5 troughs Buckaroo C. 8) Plant native grasses and plants: 300 pounds grasss seed; purchase 3,900 trees. 9) Treat noxious weeds - 468 acres. 10) Monitor pre- and post-implemetnation comparisons - a) aquatic invertebrate inventory; b) plant photopoints; c) water temperatute; d) suspended sediments. 11) Meacham Creek Wastershed Assessment and Restoration Plan. 12) Umatilla River sub-basin Watershed Assessment. 13) Riparian Easements (>= 15 yrs) Simenton - 80 acres/ 0.5 RM Hachler - 10-20 acres/0.1 RM. 14) Annual Report.

2004: Similar expected from budget projection. 1) Develop projects and cost shares with landowners, and local, state and federal agencies, 2) Secure riparian easements on and off reservation, 3) Fulfill permitting requirements: NEPA, cultural surveys, Biological Assessments, etc. as required. 4) Maintain or continue implementation of instream habitat enhancement projects - a) Station 29, b) Hartman. 5) Maintain riparian corridor fencing. 6) Construct new riparian corridor fencing. Harvey - 2 mi, Simenton - 0.5 mi, Wolfe 1.0 mi. 7) Develop off-stream watering sources for livestock and wildlife - a) S&M Farms (last 75%); b) 5 troughs Buckaroo C. 8) Plant native grasses and plants: 300 pounds grasss seed; purchase 3,900 trees. 9) Treat noxious weeds - 468 acres. 10) Monitor pre- and post-implemetnation comparisons - a) aquatic invertebrate inventory; b) plant photopoints; c) water temperatute; d) suspended sediments. 11) Meacham Creek Wastershed Assessment and Restoration Plan. 12) Umatilla River sub-basin Watershed Assessment. 13) Riparian Easements (>= 15 yrs) Simenton - 80 acres/ 0.5 RM Hachler - 10-20 acres/0.1 RM. 14) Annual Report.

2005: Similar expected from budget projection. 1) Develop projects and cost shares with landowners, and local, state and federal agencies, 2) Secure riparian easements on and off reservation, 3) Fulfill permitting requirements: NEPA, cultural surveys, Biological Assessments, etc. as required. 4) Maintain or continue implementation of instream habitat enhancement projects - a) Station 29, b) Hartman. 5) Maintain riparian corridor fencing. 6) Construct new riparian corridor fencing. Harvey - 2 mi, Simenton - 0.5 mi, Wolfe 1.0 mi. 7) Develop off-stream watering sources for livestock and wildlife - a) S&M Farms (last 75%); b) 5 troughs Buckaroo C. 8) Plant native grasses and plants: 300 pounds grasss seed; purchase 3,900 trees. 9) Treat noxious weeds - 468 acres. 10) Monitor pre- and post-implemetnation comparisons - a) aquatic invertebrate inventory; b) plant photopoints; c) water temperatute; d) suspended sediments. 11) Meacham Creek Wastershed Assessment and Restoration Plan. 12) Umatilla River sub-basin Watershed Assessment. 13) Riparian Easements (>= 15 yrs) Simenton - 80 acres/ 0.5 RM Hachler - 10-20 acres/0.1 RM. 14) Annual Report.

2006: Similar expected from budget projection. 1) Develop projects and cost shares with landowners, and local, state and federal agencies, 2) Secure riparian easements on and off reservation, 3) Fulfill permitting requirements: NEPA, cultural surveys, Biological Assessments, etc. as required. 4) Maintain or continue implementation of instream habitat enhancement projects - a) Station 29, b) Hartman. 5) Maintain riparian corridor fencing. 6) Construct new riparian corridor fencing. Harvey - 2 mi, Simenton - 0.5 mi, Wolfe 1.0 mi. 7) Develop off-stream watering sources for livestock and wildlife - a) S&M Farms (last 75%); b) 5 troughs Buckaroo C. 8) Plant native grasses and plants: 300 pounds grasss seed; purchase 3,900 trees. 9) Treat noxious weeds - 468 acres. 10) Monitor pre- and post-implemetnation comparisons - a) aquatic invertebrate inventory; b) plant photopoints; c) water temperatute; d) suspended sediments. 11) Meacham Creek Wastershed Assessment and Restoration Plan. 12) Umatilla River sub-basin Watershed Assessment. 13) Riparian Easements (>= 15 yrs) Simenton - 80 acres/ 0.5 RM Hachler - 10-20 acres/0.1 RM. 14) Annual Report.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

262 **Implement Tucannon River Model Watershed Plan to Restore Salmonid Habitat (Work contracted under 1999-001-00, 1999-057-00) (BPA)**

2003: Similar expected from budget projection - 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

2004: Similar expected from budget projection - 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

2005: Similar expected from budget projection - 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

2006: Similar expected from budget projection - 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

263 **Garfield County Sediment Reduction and Riparian Improvement Program - (proposal) - funded under: 1999-021-00. 1999-059-00, 1997-088-00 (closed, but some 088 activities carried into 021 and 059 contracts) (BPA)**

2003: Similar, based on budget submitted - Planning = 1) Complete Pataha Creek Model Watershed Plan (PCMWP). 2) Implement Pataha Creek MWPa) Set up program with individual landowners - See implementation. 3) Coordinate PCMWP with the public and others to inform them about the program - a) Newsletters/newspaper-magazine articles, as applicable, b) Sponsor tours/workshops/ conferences, conduct PCMWP meetings, provide information and education with students. 4) Work with WSU on monitoring water quality to compare no-till, 2 pass seeding, and conventional seeding methods - a) Coordinate data collection, b) Operate water sediment samplers and electronic thermographs, c) Collect soil erosion data. 5) Coordinate salmon habitat work - a) Meet with landowners, Technical Adviory Committees, and WDFW, b) attend training into keep up to date on new techniques and opportunities.Implementation = 6) No till seeding (0-33% soil distrurbance - drill used to plant seed and fertilize). 7) Direct seeding (34-66% soil disturbance - 2 pass method- fertilizer then plant). 8) Critical Area seeding - grass seeding onto productive, but highly erodable land. Must remain in grass for 10 years to reduce erosion. Land that does not meet CRP criteria, or patches that are too small to be enrolled. 9) Pasture Planting - reduce erosion, but can be grazed. Usually used close to riparian areas to reduce near-stream erosion. Required to be pasture for 10 years. Often mets CREP criteria, but farmer was not interested in signing up with CREP (under which use for grazing is not be allowed). 10) Terrace rebuilding - reduce erosion by retiering land. 11) Pipeline and spring development. 12) Write Annual Report

2004: Reduced over the years as "land lock- up" agreements expire

2005: Reduced over the years as "land lock- up" agreements expire

2006: Reduced over the years as "land lock- up" agreements expire

264 **Walla Walla River Basin Fish Habitat Enhancement (BPA)**

2003: No information provided in most recent proposal (FY2002) for outyear funding. The project sponsor suggested this was an error of omission, and that similar scopes in funding requests will be forthcoming in the future.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

283 **Asotin Watershed Project Implementation (BPA)**

2003: Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area.Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards.Work Task #3. Coordinate activities that keep people involved in the Model Watershed process.Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program.Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area.Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

2004: Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area.Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards.Work Task #3. Coordinate activities that keep people involved in the Model Watershed process.Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program.Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area.Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

2005: Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area.Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards.Work Task #3. Coordinate activities that keep people involved in the Model Watershed process.Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program.Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area.Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

2006: Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area.Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards.Work Task #3. Coordinate activities that keep people involved in the Model Watershed process.Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program.Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area.Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

2007: Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area.Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards.Work Task #3. Coordinate activities that keep people involved in the Model Watershed process.Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program.Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area.Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

287 **GIS Mapping of Asotin Creek Watershed Habitat Projects (BPA)**

2003: GIS map of all projects completed through 2003.

2004: GIS map of all projects completed through 2004.

2005: GIS map of all projects completed through 2005.

2006: GIS map of all projects completed through 2006.

2007: GIS map of all projects completed through 2007.

481 **Conduct Watershed Assessments for Priority Watersheds on Private Lands in the Columbia Plateau (BPA)**

2003: 1.Develop request for assessment work. 2. Contract for watershed assessment.

2004: 1.Develop request for assessment work. 2. Contract for watershed assessment.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

Tributary Water Quantity

14 **Toppenish-Simcoe Instream Flow Restoration and Assessment (BPA)**

2003: Adaptively update project management plan. Implement Management Plan. Operations and Maintenance. Monitoring and Evaluation. Quarterly and Annual Reports

2004: Adaptively update project management plan. Implement Management Plan. Operations and Maintenance. Monitoring and Evaluation. Quarterly and Annual Reports

2005: Adaptively update project management plan. Implement Management Plan. Operations and Maintenance. Monitoring and Evaluation. Quarterly and Annual Reports

2006: Adaptively update project management plan. Implement Management Plan. Operations and Maintenance. Monitoring and Evaluation. Quarterly and Annual Reports

44 **Repay Power for Umatilla Basin Project (BPA)**

2003: 1) Provide power for operation of Columbia river exchange pumps

2004: 1) Provide power for operation of Columbia river exchange pumps

2005: 1) Provide power for operation of Columbia river exchange pumps

2006: 1) Provide power for operation of Columbia river exchange pumps

2007: 1) Provide power for operation of Columbia river exchange pumps

55 **Increase Instream Flows to Dewatered Stream Reaches in the Walla Walla Basin (BPA)**

2003: 1) All water rights purchased/leased.

56 **Walla Walla River Flow Restoration (BPA)**

2003: 1) Low/temp data anaysis summary from monitoring program.

2004: 1) Low/temp data anaysis summary from monitoring program.

2005: 1) Low/temp data anaysis summary from monitoring program.

110 **Restore and Enhance Anadromous Fish Populations and Habitat in Salmon Creek (BPA)**

2003: (1)Completion of engineering design of Okanogan River Pump Station, drawings, estimates of construction costs. (2)Engineering design of replacement of Salmon Lake Feeder Canal.(3) NRCS engineer design Middle Reach bank stabilization projects. Develop farm management plans that are congruent with reparian restoration.(4) Lower reach channel reconstruction.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

129 **John Day Watershed Restoration Program (USBR)**

2003: 1) construct 3 off site watering systems 2) Install 8 permanent irrigation diversions 3) remove 500 acres of Junipers to increase trib flows and decrease erosion 4) construct 2 miles of riparian fencing 5) complete one return flow cooling system

2004: 1) construct 3 off site watering systems 2) Install 8 permanent irrigation diversions 3) remove 500 acres of Junipers to increase trib flows and decrease erosion 4) construct 2 miles of riparian fencing 5) complete one return flow cooling system

2005: 1) construct 3 off site watering systems 2) Install 8 permanent irrigation diversions 3) remove 500 acres of Junipers to increase trib flows and decrease erosion 4) construct 2 miles of riparian fencing 5) complete one return flow cooling system

2006: 1) construct 3 off site watering systems 2) Install 8 permanent irrigation diversions 3) remove 500 acres of Junipers to increase trib flows and decrease erosion 4) construct 2 miles of riparian fencing 5) complete one return flow cooling system

134 **Oxbow Ranch Acquisition (BPA)**

2003: 1 Manage the property according to the plan to include restoration, maintenance, and monitoring

2004: 1 Manage the property according to the plan to include restoration, maintenance, and monitoring

2005: 1 Manage the property according to the plan to include restoration, maintenance, and monitoring

2006: 1 Manage the property according to the plan to include restoration, maintenance, and monitoring

136 **15 Mile Water Rights Acquisition (BPA)**

2003: 1) Public outreach, stream prioritization, and data base management 2) monitoring new and existing water rights 3) acquisition of new water rights

137 **Wagner Ranch Acquisition (BPA)**

2003: 1) Gather baseline information to assist in the monitoring and the development of a plan 2) Protect and manage the ranch resources. A property plan will be completed

2004: 1) Gather baseline information to assist in the monitoring and the development of a plan 2) Protect and manage the ranch resources. A property plan will be completed

2005: 1) Gather baseline information to assist in the monitoring and the development of a plan 2) Protect and manage the ranch resources. A property plan will be completed

2006: 1) Gather baseline information to assist in the monitoring and the development of a plan 2) Protect and manage the ranch resources. A property plan will be completed

138 **Forrest Ranch Acquisition (BPA)**

2003: O&M

2004: O&M

2005: O&M

2006: O&M

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

140 **Columbia Plateau Water Rights Acquisition (BPA)**

2003: 1)Public outreach, stream prioritizatio and data base 2) monitoring existing and new water rights 3) acquisition of new2 water rights

2004: 1)Public outreach, stream prioritizatio and data base 2) monitoring existing and new water rights 3) acquisition of new2 water rights

383 **Beaver Creek Water Acquisitions (USBR)**

2006: Acquire water as available

2007: Acquire water as available

385 **Chelan County/Wenatchee IFIM Study (USBR)**

2003: Initiate study funding

2004: Complete study

389 **Entiat IFIM Studies (USBR)**

2003: Initiate project funding

390 **Fort-Thurlow Pump Exchange (USBR)**

2003: Final designs, NEPA compliance, Sec 7 consultation, permits, agreements

2004: Complete project

394 **L-13 Headgate (USBR)**

2003: Preliminary and final designs, complete NEPA compliance, Sec. 7 consultation, permits, construction completed

396 **L-18 Headgate (USBR)**

2003: Preliminary and final designs, complete NEPA compliance, Sec. 7 consultation, permits, construction completed

397 **L-20 Headgate (USBR)**

2003: Initiate and complete project including preliminary and final engineering design, NEPA compliance, Sec. 7 consultation, permit assistance, and construction

400 **L-35A Headgate (USBR)**

2003: Preliminary and final designs, complete NEPA compliance, Sec. 7 consultation, permits, construction completed

404 **L-3 Headgate (USBR)**

2003: Preliminary and final designs, complete NEPA compliance, Sec. 7 consultation, permits, construction completed

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

405 **L-6/S14 Water Exchange (USBR)**

2003: Complete all designs and compliance requirements; construct project.

407 **L-9 Headgate (USBR)**

2003: Preliminary and final designs, complete NEPA compliance, Sec. 7 consultation, permits, construction completed

409 **USGS Hydrologic Model Upgrades (USBR)**

2003: Assist USGS funding

412 **Methow Valley Irrigation District Twisp River Pump Exchange (USBR)**

2003: Preliminary design and initiate NEPA compliance, Sec 7 consultation

2004: Final design, complete NEPA, Sec. 7, agreements and permits

2005: Project construction

413 **Middle Fork John Day Gaging Stations (USBR)**

2003: Initiate project

2004: Continue project

2005: Continue project

2006: Continue project

2007: Continue project

414 **Middle Fork John Day IFIM Study (USBR)**

2003: Initiate study

2004: Continue study

2005: Continue study

2006: Continue study

2007: Continue study

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

418 **North Fork John Day River IFIM Studies (USBR)**

2004: Initiate studies

2005: Continue studies

2006: Continue studies

2007: Continue studies

419 **Okanogan Gaging Stations (USBR)**

2003: Support funding for Okanogan County stream gages for continued data collection

422 **Upper John Day Gaging stations (USBR)**

2003: Initiate

2004: Continue program

2005: Continue program

2006: Continue program

2007: Continue program

423 **Upper John Day IFIM study (USBR)**

2003: Initiate study

2004: Continue study

2005: Continue study

2006: Complete study

424 **USBR Entiat Subbasin Program Management (USBR)**

2003: Initiate program and establish coordination and compliance procedures

2004: Program management and future year project identification

2005: Program management and future year project identification

2006: Program management and future year project identification

2007: Program management and future year project identification

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

425 **USBR Lemhi program management (USBR)**

2003: Continue program management; complete programmatic environmental assessment, fund specific projects.

2004: Continue program management; complete programmatic Sec. 7 consultations.

2005: Continue program management.

2006: Continue program management.

2007: Continue program management.

426 **USBR Little Salmon Subbasin Program Management (USBR)**

2004: Initiate program and establish coordination and compliance procedures

2005: Program management and future year project identification

2006: Program management and future year project identification

2007: Program management and future year project identification

427 **USBR Methow program management (USBR)**

2003: Program management, identify and fund specific projects.

2004: Program management.

2005: Program management.

2006: Program management.

2007: Program management.

428 **USBR Middle Clearwater Subbasin Program Management (USBR)**

2003: Initiate program and establish coordination and compliance procedures

2004: Program management and future year project identification

2005: Program management and future year project identification

2006: Program management and future year project identification

2007: Program management and future year project identification

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

429 **USBR Middle Fork John Day program management (USBR)**

2003: Program management.

2004: Program management.

2005: Program management.

2006: Program management.

2007: Program management.

430 **USBR North Fork John Day Program Management (USBR)**

2003: Initiate program and establish coordination and compliance procedures

2004: Program management and future year project identification

2005: Program management and future year project identification

2006: Program management and future year project identification

2007: Program management and future year project identification

431 **USBR Upper John Day Program Management (USBR)**

2003: Program management.

2004: Program management.

2005: Program management.

2006: Program management.

2007: Program management.

432 **USBR Upper Salmon program management (USBR)**

2003: Continue program management, complete programmatic NEPA

2004: Continue program management, complete programmatic Sec. 7 consultations

2005: Continue program management

2006: Continute program management

2007: Continue program management

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

433 **USBR Wenatchee Subbasin Program Management (USBR)**

2003: Program management and future year project identification

2004: Program management and future year project identification

2005: Program management and future year project identification

2006: Program management and future year project identification

2007: Program management and future year project identification

435 **Williams Creek Headgate Projects (USBR)**

2003: Project initiation

2004: Complete preliminary and final engineering designs, NEPA compliance, Sec 7. consultation, permit assistance, and construction

Tributary Watershed Health

7 **Yakama Nation - Riparian/Wetlands Restoration (BPA)**

2003: Secure lands for habitat enhancement. Monitor and evalualte habitat land condition. Prepare site specific enhancement and management plans. Perform maintenance of secured lands consistent with enhancement plans. Prepare and submit quarterly and annual reports.

2004: Secure lands for habitat enhancement. Monitor and evalualte habitat land condition. Prepare site specific enhancement and management plans. Perform maintenance of secured lands consistent with enhancement plans. Prepare and submit quarterly and annual reports.

2005: Secure lands for habitat enhancement. Monitor and evalualte habitat land condition. Prepare site specific enhancement and management plans. Perform maintenance of secured lands consistent with enhancement plans. Prepare and submit quarterly and annual reports.

2006: Secure lands for habitat enhancement. Monitor and evalualte habitat land condition. Prepare site specific enhancement and management plans. Perform maintenance of secured lands consistent with enhancement plans. Prepare and submit quarterly and annual reports.

11 **Satus Watershed Restoration (BPA)**

2003: Restore natural riparian and upland vegetation patterns. Reduce erosion. Improve wildlife habitat. Moderate the flow regime on fish bearing streams. Improve aquatic habitat. Monitor changes in fish populations, watershed behavior and results of restoration treatments. Prepare quarterly and annual report.

2004: Restore natural riparian and upland vegetation patterns. Reduce erosion. Improve wildlife habitat. Moderate the flow regime on fish bearing streams. Improve aquatic habitat. Monitor changes in fish populations, watershed behavior and results of restoration treatments. Prepare quarterly and annual report.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

13 **Yakama Nation Yakima/Klickitat Fisheries Project (YKFP) Yakima Side Channels (BPA)**

2003: Protect priority habitats through acquisition, and purchase of conservation easements. Restore Yakima River/Naches River mainstem connectivity with protected lands, were possible, based on work plan. Restore and/or enhance the function of other side channel habitats, as identified following protection of such lands. Monitor habitat funcition on protected and restored lands. Update management plan(s) for protected lands. Prepare quarterly and annual report.

2004: Protect priority habitats through acquisition, and purchase of conservation easements. Restore Yakima River/Naches River mainstem connectivity with protected lands, were possible, based on work plan. Restore and/or enhance the function of other side channel habitats, as identified following protection of such lands. Monitor habitat funcition on protected and restored lands. Update management plan(s) for protected lands. Prepare quarterly and annual report.

2005: Protect priority habitats through acquisition, and purchase of conservation easements. Restore Yakima River/Naches River mainstem connectivity with protected lands, were possible, based on work plan. Restore and/or enhance the function of other side channel habitats, as identified following protection of such lands. Monitor habitat funcition on protected and restored lands. Update management plan(s) for protected lands. Prepare quarterly and annual report.

2006: Protect priority habitats through acquisition, and purchase of conservation easements. Restore Yakima River/Naches River mainstem connectivity with protected lands, were possible, based on work plan. Restore and/or enhance the function of other side channel habitats, as identified following protection of such lands. Monitor habitat funcition on protected and restored lands. Update management plan(s) for protected lands. Prepare quarterly and annual report.

15 **Restore Upper Toppenish Watershed (BPA)**

2003: Stablize headcuts, especially in headwater meadows. Retain sediment in incised and widened ephemeral and intermittent channels. Stablize sediment depsits with appropriate native vegetation. Enhance channel/floodplain interactions. Reduce fine sediment delivery to fish-bearing streams. Monitor/evaluation. Reports.

2004: Stablize headcuts, especially in headwater meadows. Retain sediment in incised and widened ephemeral and intermittent channels. Stablize sediment depsits with appropriate native vegetation. Enhance channel/floodplain interactions. Reduce fine sediment delivery to fish-bearing streams. Monitor/evaluation. Reports.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

16 **Yakama Nation Yakima/Klickitat Fisheries Project (YKFP) Reestablish Safe Access into Tributaries of the Yakima Subbasin (BPA)**

2003: A report detailing the location, description and number of migration barriers and unscreened diversions in ten Yakima subbasin tributaries. This report will be provided in increments as addenda to the management plan and as surveys are completed. Identify sites and structures that provide migratory access for juvenile and adult anadromous salmonids, in all tributaries deemed economically feasible for fixing. Install irrigation diversion screens to provide safe access to tributaries, by preventing entrainment into irrigation ditches. Develop conservation easements and property acquisition on habitats with high functional value. Coordinate with lasdowners on fencing to protect riparian habitat from improper grazing. Prepare quarterly and annual reports on project efforts and results, including number of miles of tributary rearing habitat that is regained through the fishway/screening and habitat protection efforts. Update the Project Management Plan.

2004: A report detailing the location, description and number of migration barriers and unscreened diversions in ten Yakima subbasin tributaries. This report will be provided in increments as addenda to the management plan and as surveys are completed. Identify sites and structures that provide migratory access for juvenile and adult anadromous salmonids, in all tributaries deemed economically feasible for fixing. Install irrigation diversion screens to provide safe access to tributaries, by preventing entrainment into irrigation ditches. Develop conservation easements and property acquisition on habitats with high functional value. Coordinate with lasdowners on fencing to protect riparian habitat from improper grazing. Prepare quarterly and annual reports on project efforts and results, including number of miles of tributary rearing habitat that is regained through the fishway/screening and habitat protection efforts. Update the Project Management Plan.

2005: A report detailing the location, description and number of migration barriers and unscreened diversions in ten Yakima subbasin tributaries. This report will be provided in increments as addenda to the management plan and as surveys are completed. Identify sites and structures that provide migratory access for juvenile and adult anadromous salmonids, in all tributaries deemed economically feasible for fixing. Install irrigation diversion screens to provide safe access to tributaries, by preventing entrainment into irrigation ditches. Develop conservation easements and property acquisition on habitats with high functional value. Coordinate with lasdowners on fencing to protect riparian habitat from improper grazing. Prepare quarterly and annual reports on project efforts and results, including number of miles of tributary rearing habitat that is regained through the fishway/screening and habitat protection efforts. Update the Project Management Plan.

2006: A report detailing the location, description and number of migration barriers and unscreened diversions in ten Yakima subbasin tributaries. This report will be provided in increments as addenda to the management plan and as surveys are completed. Identify sites and structures that provide migratory access for juvenile and adult anadromous salmonids, in all tributaries deemed economically feasible for fixing. Install irrigation diversion screens to provide safe access to tributaries, by preventing entrainment into irrigation ditches. Develop conservation easements and property acquisition on habitats with high functional value. Coordinate with lasdowners on fencing to protect riparian habitat from improper grazing. Prepare quarterly and annual reports on project efforts and results, including number of miles of tributary rearing habitat that is regained through the fishway/screening and habitat protection efforts. Update the Project Management Plan.

18 **Rock Creek Watershed Assessment and Restoration project. (BPA)**

2003: Implementation of proposed actions to address findings in assessment pending review of assessment plan (not anticipated until November 2002)

2004: Implementation of proposed actions to address findings in assessment pending review of assessment plan (not anticipated until November 2002)

21 **Yakima Tributary Access and Habitat Program (Objective 1: Early Actions) (BPA)**

2003: Meet and coordinate with are landowners and irrigators to coordinate on actions. Identify prioritized sites through surveys. Organize tributary teams and work plans to address passage problems. Prepare design plans for screens. Prepare construction plans, implement contracts in coordination with landowners. Install new screens on irrigation diversions.

22 **Protect Normative Structure and Function of Critical Aquatic and Terrestrial Habitat (BPA)**

2003: Implementation of strategic plan following Council review and approval

2004: Implementation of strategic plan following Council review and approval

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

36 **Lower Klickitat Riparian and In-Channel Habitat Enhancement Project (BPA)**

2003: A. Acquire and manage information to facilitate identification and prioritization of sites for restoration activities. Develop application to effectively and efficiently manage habitat data. Gather existing and when needed, generate new spatial data. Initiate linkage of spatial and habitat data; Identify data gaps - identify measures to fill them. Collect streamflow data on the Little Klick. River, Swale Ck, Summit Ck, White Ck. and Trout Ck. Identify and priortize subreaches for restoration in Swale Creek canyon. Assess amount of riparian habitat lost in swale Ck headwaters in period of record. Identify sites to restore floodplain connectivity on mainstem Klickitat R betw. RM 15 and 32. B. Protect, restore, and enhance priortiy wathersheds and reaches to increase reparian, wetland, and stream habitat quality. Protect areas of existing high-quality habitat condition and prevent further deterioration degraded habitats. Enhance areas of degraded stream channel and/or habitat condition. Revegetate streambank on the Little Klickitat River nean RM 20.5. C. Monitor project site-specific and basin-wide conditions to assess habitat trends and effectiveness of restoration activities. Monitor site-specific habitat conditons. Monitor basinwide habitat conditions. D. Reports - Prepare quaterly and annual reports

2004: A. Acquire and manage information to facilitate identification and prioritization of sites for restoration activities. Develop application to effectively and efficiently manage habitat data. Gather existing and when needed, generate new spatial data. Initiate linkage of spatial and habitat data; Identify data gaps - identify measures to fill them. Collect streamflow data on the Little Klick. River, Swale Ck, Summit Ck, White Ck. and Trout Ck. Identify and priortize subreaches for restoration in Swale Creek canyon. Assess amount of riparian habitat lost in swale Ck headwaters in period of record. Identify sites to restore floodplain connectivity on mainstem Klickitat R betw. RM 15 and 32. B. Protect, restore, and enhance priortiy wathersheds and reaches to increase reparian, wetland, and stream habitat quality. Protect areas of existing high-quality habitat condition and prevent further deterioration degraded habitats. Enhance areas of degraded stream channel and/or habitat condition. Revegetate streambank on the Little Klickitat River nean RM 20.5. C. Monitor project site-specific and basin-wide conditions to assess habitat trends and effectiveness of restoration activities. Monitor site-specific habitat conditons. Monitor basinwide habitat conditions. D. Reports - Prepare quaterly and annual reports

55 **Increase Instream Flows to Dewatered Stream Reaches in the Walla Walla Basin (BPA)**

2003: 1) All water rights purchased/leased.

80 **Enhance Fish, Riparian, and Wildlife Habitat Within the Red River Watershed (BPA)**

2003: 1. Secure conservation easements. This process includes hazardous substance surveys and appraisals on potential conservation easement properties. 2. Plant seedlings and willow poles. 3. Effectiveness Monitoring: Evaluate the performance of restoration work to stabilize the stream channel, restore floodplain function, enhance fish and wildlife habitat, and reestablish native riparian and wet meadow plant communities.

2004: 1. Secure conservation easements. This process includes hazardous substance surveys and appraisals on potential conservation easement properties. 2. Plant seedlings and willow poles. 3. Effectiveness Monitoring: Evaluate the performance of restoration work to stabilize the stream channel, restore floodplain function, enhance fish and wildlife habitat, and reestablish native riparian and wet meadow plant communities.

81 **Custer Soil & Water Conservation District Salmon River Fish Passage Enhancement (BPA)**

2003: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

2004: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

83 **Idaho Model Watershed Habitat Improvement Project (BPA)**

2003: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

2004: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

84 **Salmon River Habitat Enhancement M & E (BPA)**

2003: 1. Decrease both surface and subsurface streambed sediment in Bear Valley Creek (BVC) (MF Salmon River) to less than 25% surface fines in low gradient reaches and less than 30% subsurface fines by volume. 2. Increase streambank cover and stability in BVC to bank stability greater than 80% with 75% of banks undercut. 3. Increase rearing area for anadromous fish in the Yankee Fork Salmon River (YFSR). 4. Incorporate the off-channel rearing area into a low-tech, bioenhancement facility for chinook salmon and steelhead in the YFSR. 5. Decrease both surface and subsurface streambed sediment in Herd Creek (HC) and Big Boulder Creek (BBC) (EF Salmon River) to less than 25% surface fines in low gradient reaches and less than 30% subsurface fines by volume. 6. Increase streambank cover and stability in HC and BBC to bank stability greater than 80% with 75% of banks undercut. Increase streambank cover and stability in HC and BBC. 7. Monitor habitat improvements and fish numbers.

2004: 1. Decrease both surface and subsurface streambed sediment in Bear Valley Creek (BVC) (MF Salmon River) to less than 25% surface fines in low gradient reaches and less than 30% subsurface fines by volume. 2. Increase streambank cover and stability in BVC to bank stability greater than 80% with 75% of banks undercut. 3. Increase rearing area for anadromous fish in the Yankee Fork Salmon River (YFSR). 4. Incorporate the off-channel rearing area into a low-tech, bioenhancement facility for chinook salmon and steelhead in the YFSR. 5. Decrease both surface and subsurface streambed sediment in Herd Creek (HC) and Big Boulder Creek (BBC) (EF Salmon River) to less than 25% surface fines in low gradient reaches and less than 30% subsurface fines by volume. 6. Increase streambank cover and stability in HC and BBC to bank stability greater than 80% with 75% of banks undercut. Increase streambank cover and stability in HC and BBC. 7. Monitor habitat improvements and fish numbers.

85 **Upper Salmon River Diversion Consolidation Program (BPA)**

2003: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

2004: 1. This project has been restructured consistent with a geographic approach for project selection, planning, implementation. 2. Minimize losses and migratory delays or blockages of salmonids that are associated with irrigation diversion structures and water withdrawels along streams on non-federal lands. 3. Improve critical habitats for salmonids on non-federal lands by improving riparian conditions and reducing streambed sedimentation and water temprature.

86 **Protect and Restore Lolo Creek Watershed (BPA)**

2003: 1. Restore and enhance critical riparian and in-stream habitat to reduce sedimentation and stream temperatures. 2. Restore hydrologic connectivity and fish passage within the Lolo Creek watershed. 3. Alleviate sediment input to the stream and reduce risk from sediment related mass wasting and surface erosion related to road sources.

2004: 1. Restore and enhance critical riparian and in-stream habitat to reduce sedimentation and stream temperatures. 2. Restore hydrologic connectivity and fish passage within the Lolo Creek watershed. 3. Alleviate sediment input to the stream and reduce risk from sediment related mass wasting and surface erosion related to road sources.

96 **Holistic Restoration of the Twelvemile Reach of the Salmon River near Challis, Idaho (BPA)**

2003: Develop project designs for selected restoration opportunities. Quantify benefits at the watershed scale - particularly related to temperature and fine sediments. Implementation and restoration and bank stabilization work on 12 mile section of Salmon River. Restore meadow and riparian plant communities. Conservation/access easements.

2004: Develop project designs for selected restoration opportunities. Quantify benefits at the watershed scale - particularly related to temperature and fine sediments. Implementation and restoration and bank stabilization work on 12 mile section of Salmon River. Restore meadow and riparian plant communities. Conservation/access easements.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

98 **Protect and Restore The North Lochsa Face Analysis Area Watersheds (BPA)**

2003: 1. Alleviate sediment input from road caused sources. 2. Breakdown of project information and peer review

2004: 1. Alleviate sediment input from road caused sources. 2. Breakdown of project information and peer review

99 **Rehabilitate Newsome Creek Watershed - South Fork Clearwater River (BPA)**

2003: 1. Alleviate sediment input and potential from road sources. 2.Design rehabilitation for the upper channel reaches of Newsome Creek affected by past dredge mining. 3.Improve Fish Passage and alleviate potential culvert problems.

2004: 1. Alleviate sediment input and potential from road sources. 2.Design rehabilitation for the upper channel reaches of Newsome Creek affected by past dredge mining 3.Improve Fish Passage and alleviate potential culvert problems.

100 **Protect & Restore Mill Creek (BPA)**

2003: 1. Restore meadow and riparian plant communities to enhance fish and wildlife habitat. 2. Return passage to inaccessible tributary habitat and alleviate sediment sources associated with culverts.

2004: 1. Restore meadow and riparian plant communities to enhance fish and wildlife habitat. 2. Return passage to inaccessible tributary habitat and alleviate sediment sources associated with culverts.

110 **Restore and Enhance Anadromous Fish Populations and Habitat in Salmon Creek (BPA)**

2003: (1)Completion of engineering design of Okanogan River Pump Station, drawings, estimates of construction costs. (2)Engineering design of replacement of Salmon Lake Feeder Canal.(3) NRCS engineer design Middle Reach bank stabilization projects. Develop farm management plans that are congruent with reparian restoration.(4) Lower reach channel reconstruction.

114 **Anadromous Fish Habitat & Passage in Omak Creek (BPA)**

2003: Propose the implementation of a plan to restore 40-mils of historical anadromous fish habitat (summer steelhead) by improving land management practices and conducting restoration activities that accelerate recovery of the Omak Creek watershed.

115 **Remove Barriers/Restore Instream Habitat on Chumstick Creek (BPA)**

2003: Plan and design 12 barrier removal/stream restoration projects.Implement construction of projects designed. Complete Riparian Plantings.

2004: Construction/implementation, O&M, M&E.

2005: O&M and M&E

2006: O&M and M&E

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

119 **Tapteal Bend Riparian Corridor Restoration (BPA)**

2003: Operation and Maintenance

2004: Operation and Maintenance

2005: Operation and Maintenance

2006: Operation and Maintenance

126 **Protect and Enhance John Day Anadromous Fish (BPA)**

2003: 1) construct 6.5 miles of riparian protection fencing with 10 and 15 year lease agreements. 2)construct 6 off site water developments away from riparian area. 3)inspect 80 miles of fence and perform maintenance on 23 miles of fence. 4)complete maintenance on 5 off riparian site water developments 5) Complete mine tailings restoration on Granite Creek

2004: 1) construct 6.5 miles of riparian protection fencing with 10 and 15 year lease agreements. 2)construct 6 off site water developments away from riparian area. 3)inspect 80 miles of fence and perform maintenance on 23 miles of fence. 4)complete maintenance on 5 off riparian site water developments 5) Complete mine tailings restoration on Granite Creek

2005: 1) construct 6.5 miles of riparian protection fencing with 10 and 15 year lease agreements. 2)construct 6 off site water developments away from riparian area. 3)inspect 80 miles of fence and perform maintenance on 23 miles of fence. 4)complete maintenance on 5 off riparian site water developments 5) Complete mine tailings restoration on Granite Creek

2006: 1) construct 6.5 miles of riparian protection fencing with 10 and 15 year lease agreements. 2)construct 6 off site water developments away from riparian area. 3)inspect 80 miles of fence and perform maintenance on 23 miles of fence. 4)complete maintenance on 5 off riparian site water developments 5) Complete mine tailings restoration on Granite Creek

129 **John Day Watershed Restoration Program (USBR)**

2003: 1) construct 3 off site watering systems 2) Install 8 permanent irrigation diversions 3) remove 500 acres of Junipers to increase trib flows and decrease erosion 4) construct 2 miles of riparian fencing 5) complete one return flow cooling system

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2005: 1) construct 3 off site watering systems 2) Install 8 permanent irrigation diversions 3) remove 500 acres of Junipers to increase trib flows and decrease erosion 4) construct 2 miles of riparian fencing 5) complete one return flow cooling system

2006: 1) construct 3 off site watering systems 2) Install 8 permanent irrigation diversions 3) remove 500 acres of Junipers to increase trib flows and decrease erosion 4) construct 2 miles of riparian fencing 5) complete one return flow cooling system

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

132 **Pine Creek Ranch Acquisition (BPA)**

2003: 1) Gather baseline information to assist in monitoring and the development of a property plan 2) initiate the development of a property management plan 3) protect and enhance the natural resources. 4) property management plan is to be completed

2004: 1) Gather baseline information to assist in monitoring and the development of a property plan 2) initiate the development of a property management plan 3) protect and enhance the natural resources. 4) property management plan is to be completed

2005: 1) Gather baseline information to assist in monitoring and the development of a property plan 2) initiate the development of a property management plan 3) protect and enhance the natural resources. 4) property management plan is to be completed

2006: 1) Gather baseline information to assist in monitoring and the development of a property plan 2) initiate the development of a property management plan 3) protect and enhance the natural resources. 4) property management plan is to be completed

134 **Oxbow Ranch Acquisition (BPA)**

2003: 1 Manage the property according to the plan to include restoration, maintenance, and monitoring

2004: 1 Manage the property according to the plan to include restoration, maintenance, and monitoring

2005: 1 Manage the property according to the plan to include restoration, maintenance, and monitoring

2006: 1 Manage the property according to the plan to include restoration, maintenance, and monitoring

135 **North Fork John Day River Subbasin Anadromous Fish Habitat Enhancement Project (BPA)**

2003: Same as 01 except more miles of fence and more riparian easements - 1) Complete 12 miles of riparian fencing protection 2) Complete 4 off site water developments 3) Complete riparian easements

2004: Same as 01 except more miles of fence and more riparian easements - 1) Complete 12 miles of riparian fencing protection 2) Complete 4 off site water developments 3) Complete riparian easements

2005: Same as 01 except more miles of fence and more riparian easements - 1) Complete 12 miles of riparian fencing protection 2) Complete 4 off site water developments 3) Complete riparian easements

2006: Same as 01 except more miles of fence and more riparian easements - 1) Complete 12 miles of riparian fencing protection 2) Complete 4 off site water developments 3) Complete riparian easements

137 **Wagner Ranch Acquisition (BPA)**

2003: 1) Gather baseline information to assist in the monitoring and the development of a plan 2) Protect and manage the ranch resources. A property plan will be completed

2004: 1) Gather baseline information to assist in the monitoring and the development of a plan 2) Protect and manage the ranch resources. A property plan will be completed

2005: 1) Gather baseline information to assist in the monitoring and the development of a plan 2) Protect and manage the ranch resources. A property plan will be completed

2006: 1) Gather baseline information to assist in the monitoring and the development of a plan 2) Protect and manage the ranch resources. A property plan will be completed

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

138 **Forrest Ranch Acquisition (BPA)**

2003: O&M

2004: O&M

2005: O&M

2006: O&M

199 **Grouse Creek Restoration (BPA)**

2003: Project Complete

255 **Umatilla River Anadromous Fish Habitat Enhancement Project (BPA)**

2003: Similar expected from budget projection. 1) Develop projects and cost shares with landowners, and local, state and federal agencies, 2) Secure riparian easements on and off reservation, 3) Fulfill permitting requirements: NEPA, cultural surveys, Biological Assessments, etc. as required. 4) Maintain or continue implementation of instream habitat enhancement projects - a) Station 29, b) Hartman. 5) Maintain riparian corridor fencing. 6) Construct new riparian corridor fencing. Harvey - 2 mi, Simenton - 0.5 mi, Wolfe 1.0 mi. 7) Develop off-stream watering sources for livestock and wildlife - a) S&M Farms (last 75%); b) 5 troughs Buckaroo C. 8) Plant native grasses and plants: 300 pounds grasss seed; purchase 3,900 trees. 9) Treat noxious weeds - 468 acres. 10) Monitor pre- and post-implemetnation comparisons - a) aquatic invertebrate inventory; b) plant photopoints; c) water temperatute; d) suspended sediments. 11) Meacham Creek Wastershed Assessment and Restoration Plan. 12) Umatilla River sub-basin Watershed Assessment. 13) Riparian Easements (>= 15 yrs) Simenton - 80 acres/ 0.5 RM Hachler - 10-20 acres/0.1 RM. 14) Annual Report.

2004: Similar expected from budget projection. 1) Develop projects and cost shares with landowners, and local, state and federal agencies, 2) Secure riparian easements on and off reservation, 3) Fulfill permitting requirements: NEPA, cultural surveys, Biological Assessments, etc. as required. 4) Maintain or continue implementation of instream habitat enhancement projects - a) Station 29, b) Hartman. 5) Maintain riparian corridor fencing. 6) Construct new riparian corridor fencing. Harvey - 2 mi, Simenton - 0.5 mi, Wolfe 1.0 mi. 7) Develop off-stream watering sources for livestock and wildlife - a) S&M Farms (last 75%); b) 5 troughs Buckaroo C. 8) Plant native grasses and plants: 300 pounds grasss seed; purchase 3,900 trees. 9) Treat noxious weeds - 468 acres. 10) Monitor pre- and post-implemetnation comparisons - a) aquatic invertebrate inventory; b) plant photopoints; c) water temperatute; d) suspended sediments. 11) Meacham Creek Wastershed Assessment and Restoration Plan. 12) Umatilla River sub-basin Watershed Assessment. 13) Riparian Easements (>= 15 yrs) Simenton - 80 acres/ 0.5 RM Hachler - 10-20 acres/0.1 RM. 14) Annual Report.

2005: Similar expected from budget projection. 1) Develop projects and cost shares with landowners, and local, state and federal agencies, 2) Secure riparian easements on and off reservation, 3) Fulfill permitting requirements: NEPA, cultural surveys, Biological Assessments, etc. as required. 4) Maintain or continue implementation of instream habitat enhancement projects - a) Station 29, b) Hartman. 5) Maintain riparian corridor fencing. 6) Construct new riparian corridor fencing. Harvey - 2 mi, Simenton - 0.5 mi, Wolfe 1.0 mi. 7) Develop off-stream watering sources for livestock and wildlife - a) S&M Farms (last 75%); b) 5 troughs Buckaroo C. 8) Plant native grasses and plants: 300 pounds grasss seed; purchase 3,900 trees. 9) Treat noxious weeds - 468 acres. 10) Monitor pre- and post-implemetnation comparisons - a) aquatic invertebrate inventory; b) plant photopoints; c) water temperatute; d) suspended sediments. 11) Meacham Creek Wastershed Assessment and Restoration Plan. 12) Umatilla River sub-basin Watershed Assessment. 13) Riparian Easements (>= 15 yrs) Simenton - 80 acres/ 0.5 RM Hachler - 10-20 acres/0.1 RM. 14) Annual Report.

2006: Similar expected from budget projection. 1) Develop projects and cost shares with landowners, and local, state and federal agencies, 2) Secure riparian easements on and off reservation, 3) Fulfill permitting requirements: NEPA, cultural surveys, Biological Assessments, etc. as required. 4) Maintain or continue implementation of instream habitat enhancement projects - a) Station 29, b) Hartman. 5) Maintain riparian corridor fencing. 6) Construct new riparian corridor fencing. Harvey - 2 mi, Simenton - 0.5 mi, Wolfe 1.0 mi. 7) Develop off-stream watering sources for livestock and wildlife - a) S&M Farms (last 75%); b) 5 troughs Buckaroo C. 8) Plant native grasses and plants: 300 pounds grasss seed; purchase 3,900 trees. 9) Treat noxious weeds - 468 acres. 10) Monitor pre- and post-implemetnation comparisons - a) aquatic invertebrate inventory; b) plant photopoints; c) water temperatute; d) suspended sediments. 11) Meacham Creek Wastershed Assessment and Restoration Plan. 12) Umatilla River sub-basin Watershed Assessment. 13) Riparian Easements (>= 15 yrs) Simenton - 80 acres/ 0.5 RM Hachler - 10-20 acres/0.1 RM. 14) Annual Report.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

262 **Implement Tucannon River Model Watershed Plan to Restore Salmonid Habitat (Work contracted under 1999-001-00, 1999-057-00) (BPA)**

2003: Similar expected from budget projection - 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

2004: Similar expected from budget projection - 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

2005: Similar expected from budget projection - 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

2006: Similar expected from budget projection - 1) Upland Best management Implementation to reduce soil erosion (e.g., grass waterways, sediment basins, critical area plantings): a) direct seeding 3 continued, 0 new. 2) Riparian re-vegetation and enhancement: a) develop off-stream watering sites: b) fence 1,000 ft of riparian, c) plant 20,000 stems. 3) Monitoring and Evaluation - a) Pre- versus Post- implementation habitat quality surveys, b) Water Quality sampling, c) Six-year milesone (resurvey previous habitat units after habitat improvements). 4) Install instream habitat structures - a) Camp Wooten Phase 2. 5) Coordinate wateshed council activities on private and public lands including. 6) Coordinate watershed project identification, selection, design, development, prioritization and acceptance (including NRCS). 7) Direct and assist the planning and implementation of conservation management systems for producers in the model waershed area. 8) Develop list of potential projects for FY 2003. 9) Monitor/Evaluate all projects for effectiveness in meeting Plan goal and objectives. 10) Coordinate Information and Education program. 11) Tucannon River Model Watershed Administration. 12) Subbasin Planning Coordination. 13) Water savings, Irrigation efficiency, Update screens, Install water meters. 14) Annual Report

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

263 **Garfield County Sediment Reduction and Riparian Improvement Program - (proposal) - funded under: 1999-021-00. 1999-059-00, 1997-088-00 (closed, but some 088 activities carried into 021 and 059 contracts) (BPA)**

2003: Similar, based on budget submitted - Planning = 1) Complete Pataha Creek Model Watershed Plan (PCMWP). 2) Implement Pataha Creek MWPa) Set up program with individual landowners - See implementation. 3) Coordinate PCMWP with the public and others to inform them about the program - a) Newsletters/newspaper-magazine articles, as applicable, b) Sponsor tours/workshops/ conferences, conduct PCMWP meetings, provide information and education with students. 4) Work with WSU on monitoring water quality to compare no-till, 2 pass seeding, and conventional seeding methods - a) Coordinate data collection, b) Operate water sediment samplers and electronic thermographs, c) Collect soil erosion data. 5) Coordinate salmon habitat work - a) Meet with landowners, Technical Adviory Committees, and WDFW, b) attend training into keep up to date on new techniques and opportunities.Implementation = 6) No till seeding (0-33% soil distrurbance - drill used to plant seed and fertilize). 7) Direct seeding (34-66% soil disturbance - 2 pass method- fertilizer then plant). 8) Critical Area seeding - grass seeding onto productive, but highly erodable land. Must remain in grass for 10 years to reduce erosion. Land that does not meet CRP criteria, or patches that are too small to be enrolled. 9) Pasture Planting - reduce erosion, but can be grazed. Usually used close to riparian areas to reduce near-stream erosion. Required to be pasture for 10 years. Often mets CREP criteria, but farmer was not interested in signing up with CREP (under which use for grazing is not be allowed). 10) Terrace rebuilding - reduce erosion by retiering land. 11) Pipeline and spring development. 12) Write Annual Report

2004: Reduced over the years as "land lock- up" agreements expire

2005: Reduced over the years as "land lock- up" agreements expire

2006: Reduced over the years as "land lock- up" agreements expire

264 **Walla Walla River Basin Fish Habitat Enhancement (BPA)**

2003: No information provided in most recent proposal (FY2002) for outyear funding. The project sponsor suggested this was an error of omission, and that similar scopes in funding requests will be forthcoming in the future.

281 **Asotin Creek Upland Sedimentation Reductin (BPA)**

2003: 105 Acres of Direct Seed planing

2004: 105 Acres of Direct Seed planing

2005: 105 Acres of Direct Seed planing

282 **Asotin Watershed Upland BMP's (BPA)**

2003: 169 Acres of Direct Seed planing

2004: 169 Acres of Direct Seed planing

2005: 169 Acres of Direct Seed planing

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

283 **Asotin Watershed Project Implementation (BPA)**

2003: Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area.Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards.Work Task #3. Coordinate activities that keep people involved in the Model Watershed process.Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program.Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area.Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

2004: Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area.Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards.Work Task #3. Coordinate activities that keep people involved in the Model Watershed process.Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program.Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area.Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

2005: Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area.Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards.Work Task #3. Coordinate activities that keep people involved in the Model Watershed process.Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program.Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area.Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

2006: Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area.Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards.Work Task #3. Coordinate activities that keep people involved in the Model Watershed process.Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program.Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area.Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

2007: Work Task #1. Coordinate activities in regards to fish habitat maintenance, enhancement and restoration in the Model Watershed area.Work Task #2. Ensure that the model watershed plan meets accepted environmental and biological standards.Work Task #3. Coordinate activities that keep people involved in the Model Watershed process.Work Task #4. Work with groups and individuals in the upper Asotin Creek basin to investigate expansion of the model watershed program.Work Task #5. Direct and assist with the planning and implementation of conservation management systems for ranchers in the model watershed area.Work Task #6. Coordinate with other agencies working on salmon habitat enhancement and restoration in the Model Watershed.

284 **Asotin Creek Five Year Minimum Till Program (BPA)**

2003: 773 Acres of Direct Seed planing

2004: 773 Acres of Direct Seed planing

2005: 773 Acres of Direct Seed planing

285 **Asotin Watershed Upland BMP Implementation (BPA)**

2003: 5 Sediment Bains

2004: 5 Sediment Bains

2005: 5 Sediment Bains

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

288 **Asotin Creek Riparian Planting (BPA)**

2003: Plant 20,000 trees within CREP riparian corridor

2004: Plant 20,000 trees within CREP riparian corridor

2005: Plant 20,000 trees within CREP riparian corridor

2006: Plant 20,000 trees within CREP riparian corridor

2007: Plant 20,000 trees within CREP riparian corridor

289 **Asotin Creek Riparian Fencing Projects (BPA)**

2003: One mile of riparian corridor fence, develop 5 spring sources, and 10 off site watering troughs

2004: One mile of riparian corridor fence, develop 5 spring sources, and 10 off site watering troughs

2005: One mile of riparian corridor fence, develop 5 spring sources, and 10 off site watering troughs

2006: One mile of riparian corridor fence, develop 5 spring sources, and 10 off site watering troughs

2007: One mile of riparian corridor fence, develop 5 spring sources, and 10 off site watering troughs

290 **Asotin Creek Channel, Floodplain and Riparian Restoration (BPA)**

2003: Two miles of CREP

533 **Brownsmead, Clatsop County OR, Section 1135 (CORPS)**

2003: Complete Planning and Design, Complete Construction

2004: Post construction

555 **Salmon River Aquatic Ecosystem Restoration (CORPS)**

2003: Initial Construction (3 Sites)

2004: Construction at additional sites

2005: Continued Construction - new sites

2006: Monitoring

2007: Monitoring

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

1. Protect & Enhance Tributary Habitat

558 **Steigerwald Lake, Camas, Washougal, WA, Section 1135 (CORPS)**

2003: Complete Feasibility, initiate P&S

2004: Complete P&S, initiate construction

2005: Complete construction

559 **SW Washington Streams Section 206 (CORPS)**

2003: Initiate feasibility study

2004: Complete plans and specs, initiate construction

2005: Complete construction

560 **Trout Creek Section 206 (CORPS)**

2003: Complete construction

561 **Walla Walla GI Feasibility Study (CORPS)**

2005: Feasibility report completed

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

2. Improve Mainstem Habitat on an Experiemental Basis

252 **Subbasin Planning, Regional Level (BPA)**

2003: 1. Council will provide support to Regional Group by staffing and conducting meetings with regional coordination group; make reimbursements for necessary expenses for Regional Group meetings. 2. Council will establish a mechanism by which NMFS and the USFWS will review and endorse subbasin plans. Council will coordinate ESA recovery efforts and subbasin planning. 3. Council will coordinate/consult with the region's Indian Tribes. 4. Council will coordinate with resource management agencies regarding the relationship between subbasin planning and resource management planning 5. Council will coordinate with statewide/provincial/tribal coordination groups to establish appropriate coordination group(s) within each state. Conduct progress reviews; monitor funding allocations, and schedule progress on a statewide level. 6. Council will review and track progress of subbasin level work region-wide. Review statements of work, budgets and schedules for subbasin lead entities. Review subbasin allocation funding, progress reports and draft subbasin plans. Meet quarterly with statewide/provincial/tribal Coordination groups to review overall statewide progress. 7. Council will review the award of contracts with secondary entities within subbasins (co-leads or supporting organization) 8. Council will manage all subbasin and statewide/provincial/tribal level contracts. Prepare contracts and proposed amendments. Pay contractor invoices and prepare expenditure reports. Prepare and execute amendments to the master contract to reflect subcontract activities. 9. Council will initiate ISRP review and incorporate results into issue paper. 10. Council will initiate public review and incorporate results into issue paper. 11. Council will coordinate/consult with region's Indian Tribes for consistency with legal rights. 12. Council will coordinate with NMFS and USFWS for review and endorsement of subbasin plans for ESA use, where applicable. Incorporate results into issue paper. 13. Council will prepare final report and recommendation to Council for adoption of each subbasin plan. 14. Council will adopt subbasin plans into Fish and Wildlife Program, applying substantive and procedural requirements of the NW Power Act. II. Regional Technical Support Council will provide regional-level technical support basin-wide (assessment, coordination and information management) and provide out-of-subbasin assumptions. 1. Council will establish a regional technical group that will meet regularly to coordinate technical products associated for subbasin planning. 2. Council will provide staff support for regional and subbasin-level technical support. 3. Council will establish and maintain a liaison to coordinate subbasin planning with NMFS's Technical Review Teams and USFWS's bull trout recovery teams. 4. Council will provide written guidance to statewide/provincial/tribal technical support teams regarding procedures for implementing subbasin and province-level biological assessments, including sample products and descriptions of information sources and available analytical tools. 5. Council will establish and maintain an Ecosystem Diagnosis and Treatment (EDT) support function, including providing appropriate training for technical support team members in the scientific concepts and analytical tools that will be applied to subbasin assessment. 6. Council will establish and maintain a wildlife technical support function. 7. Council will maintain and enhance the Internet version of the EDT model, including EDT databases and online tools. 8. Council will establish and maintain a web-based system for accessing and transferring subbasin planning information. 9. Council will, through Bonneville, establish and maintain a system for managing and accessing spatial data over the Internet using Internet Mapping System (IMS) software. 10. Council will, through Bonneville, produce and provide basic geographic information system (GIS) products and services for subbasin planning. 11. Council will provide fish productivity and related species data to planners. 12. Council will provide library services to subbasin planning including dissemination of literature and storage of subbasin plan products.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

2. Improve Mainstem Habitat on an Experiemental Basis

2004: 1. Council will provide support to Regional Group by staffing and conducting meetings with regional coordination group; make reimbursements for necessary expenses for Regional Group meetings. 2. . Council will establish a mechanism by which NMFS and the USFWS will review and endorse subbasin plans. Council will coordinate ESA recovery efforts and subbasin planning. 3. Council will coordinate/consult with the region's Indian Tribes. 4. Council will coordinate with resource management agencies regarding the relationship between subbasin planning and resource management planning 5. Council will coordinate with statewide/provincial/tribal coordination groups to establish appropriate coordination group(s) within each state. Conduct progress reviews; monitor funding allocations, and schedule progress on a statewide level. 6. Council will review and track progress of subbasin level work region-wide. Review statements of work, budgets and schedules for subbasin lead entities. Review subbasin allocation funding, progress reports and draft subbasin plans. Meet quarterly with statewide/provincial/tribal Coordination groups to review overall statewide progress. 7. Council will review the award of contracts with secondary entities within subbasins (co-leads or supporting organization) 8. Council will manage all subbasin and statewide/provincial/tribal level contracts. Prepare contracts and proposed amendments. Pay contractor invoices and prepare expenditure reports. Prepare and execute amendments to the master contract to reflect subcontract activities. 9. Council will initiate ISRP review and incorporate results into issue paper. 10. Council will initiate public review and incorporate results into issue paper. 11. Council will coordinate/consult with region's Indian Tribes for consistency with legal rights. 12. Council will coordinate with NMFS and USFWS for review and endorsement of subbasin plans for ESA use, where applicable. Incorporate results into issue paper. 13. Council will prepare final report and recommendation to Council for adoption of each subbasin plan. 14. Council will adopt subbasin plans into Fish and Wildlife Program, applying substantive and procedural requirements of the NW Power Act. II. Regional Technical Support - Council will provide regional-level technical support basin-wide (assessment, coordination and information management) and provide out-of-subbasin assumptions. 1. Council will establish a regional technical group that will meet regularly to coordinate technical products associated for subbasin planning. 2. Council will provide staff support for regional and subbasin-level technical support. 3. Council will establish and maintain a liaison to coordinate subbasin planning with NMFS's Technical Review Teams and USFWS's bull trout recovery teams. 4. Council will provide written guidance to statewide/provincial/tribal technical support teams regarding procedures for implementing subbasin and province-level biological assessments, including sample products and descriptions of information sources and available analytical tools. 5. Council will establish and maintain an Ecosystem Diagnosis and Treatment (EDT) support function, including providing appropriate training for technical support team members in the scientific concepts and analytical tools that will be applied to subbasin assessment. 6. Council will establish and maintain a wildlife technical support function. 7. Council will maintain and enhance the Internet version of the EDT model, including EDT databases and online tools. 8. Council will establish and maintain a web-based system for accessing and transferring subbasin planning information. 9. Council will, through Bonneville, establish and maintain a system for managing and accessing spatial data over the Internet using Internet Mapping System (IMS) software. 10. Council will, through Bonneville, produce and provide basic geographic information system (GIS) products and services for subbasin planning. 11. Council will provide fish productivity and related species data to planners. 12. Council will provide library services to subbasin planning including dissemination of literature and storage of subbasin plan products.

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2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

2. Improve Mainstem Habitat on an Experiemental Basis

253 **Subbasin Planning, Statewide/Provincial/Tribal Level (BPA)**

2003: I . Statewide (Provincial)/Tribal Coordination□Council will provide support and funding for statewide/provincial/tribal coordination and project management for subbasin planning within each state.□□·□Statewide/provincial/tribal groups in ID, MT, OR, WA will perform (a.) project management functions within each state and (b.) coordination. Specific tasks are outlined in detailed budget.□□II. Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams□□·□Council will assist with establishing technical support teams within each state, and further assist with developing a strategy that enables those teams to provide technical support to provinces and subbasins.□·□Technical support team(s) in Idaho will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Montana will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Oregon will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Washington will complete an assessment through the tasks identified in attached detailed budget.

2004: Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams□□·□Council will assist with establishing technical support teams within each state, and further assist with developing a strategy that enables those teams to provide technical support to provinces and subbasins.

2005: Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams

254 **Subbasin Planning, Subbasin Level (BPA)**

2003: Council will administer contracts for subbasin level planning. □□Council will contract with subbasin lead entities to develop subbasin level plans.

2004: Council will administer contracts for subbasin level planning. □□Council will contract with subbasin lead entities to develop subbasin level plans.

Mainstem Subbasin Planning and Assessment

69 **Evaluate Factors Limiting Columbia River Gorge Chum Salmon Populations (BPA)**

2003: 1) Assess movement of adults among three spawning areas; □2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; □4) Evaluate habitat parameters associated with chum salmon spawning success

2004: 1) Assess movement of adults among three spawning areasl; 2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; 4) Evaluate habitat parameters associated with chum salmon spawning success

2005: 1) Assess movement of adults among three spawning areas; 2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; 4) Evaluate habitat parameters associated with chum salmon spawning success

2006: 1) Assess movement of adults among three spawning areas; 2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; 4) Evaluate habitat parameters associated with chum salmon spawning success

2007: 1) Assess movement of adults among three spawning areas; 2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; 4) Evaluate habitat parameters associated with chum salmon spawning success

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

2. Improve Mainstem Habitat on an Experiemental Basis

531 **Improve spawning conditions for chum salmon in the vicinity of Pierce/Ives Islands. (CORPS)**

2003: Finalization of a report by the COE team on actions the COE can undertake to improve chum spawning and production in the mainstem river and tribuataries immediately below Bonneville Dam. Implement coordinated actions.

2004: Complete assessment and prioritization of improvements for chum spawning potential.

2005: Prepare Plans and Specifications for any necessary high priority improvements for chum spawning potential.

2006: Prepare Plans and Specifications for any necessary high priority improvements for chum spawning potential.

2007: Prepare Plans and Specifications for any necessary high priority improvements for chum spawning potential.

Mainstem Watershed Health

69 **Evaluate Factors Limiting Columbia River Gorge Chum Salmon Populations (BPA)**

2003: 1) Assess movement of adults among three spawning areas; 2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; 4) Evaluate habitat parameters associated with chum salmon spawning success

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2006: 1) Assess movement of adults among three spawning areas; 2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; 4) Evaluate habitat parameters associated with chum salmon spawning success

2007: 1) Assess movement of adults among three spawning areas; 2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; 4) Evaluate habitat parameters associated with chum salmon spawning success

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2005: Prepare Plans and Specifications for any necessary high priority improvements for chum spawning potential.

2006: Prepare Plans and Specifications for any necessary high priority improvements for chum spawning potential.

2007: Prepare Plans and Specifications for any necessary high priority improvements for chum spawning potential.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

3. Protect & Enhance Estuary Habitat

252 **Subbasin Planning, Regional Level (BPA)**

2003: 1. Council will provide support to Regional Group by staffing and conducting meetings with regional coordination group; make reimbursements for necessary expenses for Regional Group meetings. 2. Council will establish a mechanism by which NMFS and the USFWS will review and endorse subbasin plans. Council will coordinate ESA recovery efforts and subbasin planning. 3. Council will coordinate/consult with the region's Indian Tribes. 4. Council will coordinate with resource management agencies regarding the relationship between subbasin planning and resource management planning 5. Council will coordinate with statewide/provincial/tribal coordination groups to establish appropriate coordination group(s) within each state. Conduct progress reviews; monitor funding allocations, and schedule progress on a statewide level. 6. Council will review and track progress of subbasin level work region-wide. Review statements of work, budgets and schedules for subbasin lead entities. Review subbasin allocation funding, progress reports and draft subbasin plans. Meet quarterly with statewide/provincial/tribal Coordination groups to review overall statewide progress. 7. Council will review the award of contracts with secondary entities within subbasins (co-leads or supporting organization) 8. Council will manage all subbasin and statewide/provincial/tribal level contracts. Prepare contracts and proposed amendments. Pay contractor invoices and prepare expenditure reports. Prepare and execute amendments to the master contract to reflect subcontract activities. 9. Council will initiate ISRP review and incorporate results into issue paper. 10. Council will initiate public review and incorporate results into issue paper. 11. Council will coordinate/consult with region's Indian Tribes for consistency with legal rights. 12. Council will coordinate with NMFS and USFWS for review and endorsement of subbasin plans for ESA use, where applicable. Incorporate results into issue paper. 13. Council will prepare final report and recommendation to Council for adoption of each subbasin plan. 14. Council will adopt subbasin plans into Fish and Wildlife Program, applying substantive and procedural requirements of the NW Power Act. II. Regional Technical Support Council will provide regional-level technical support basin-wide (assessment, coordination and information management) and provide out-of-subbasin assumptions. 1. Council will establish a regional technical group that will meet regularly to coordinate technical products associated for subbasin planning. 2. Council will provide staff support for regional and subbasin-level technical support. 3. Council will establish and maintain a liaison to coordinate subbasin planning with NMFS's Technical Review Teams and USFWS's bull trout recovery teams. 4. Council will provide written guidance to statewide/provincial/tribal technical support teams regarding procedures for implementing subbasin and province-level biological assessments, including sample products and descriptions of information sources and available analytical tools. 5. Council will establish and maintain an Ecosystem Diagnosis and Treatment (EDT) support function, including providing appropriate training for technical support team members in the scientific concepts and analytical tools that will be applied to subbasin assessment. 6. Council will establish and maintain a wildlife technical support function. 7. Council will maintain and enhance the Internet version of the EDT model, including EDT databases and online tools. 8. Council will establish and maintain a web-based system for accessing and transferring subbasin planning information. 9. Council will, through Bonneville, establish and maintain a system for managing and accessing spatial data over the Internet using Internet Mapping System (IMS) software. 10. Council will, through Bonneville, produce and provide basic geographic information system (GIS) products and services for subbasin planning. 11. Council will provide fish productivity and related species data to planners. 12. Council will provide library services to subbasin planning including dissemination of literature and storage of subbasin plan products.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

3. Protect & Enhance Estuary Habitat

2004: 1. Council will provide support to Regional Group by staffing and conducting meetings with regional coordination group; make reimbursements for necessary expenses for Regional Group meetings. 2. . Council will establish a mechanism by which NMFS and the USFWS will review and endorse subbasin plans. Council will coordinate ESA recovery efforts and subbasin planning. 3. Council will coordinate/consult with the region's Indian Tribes. 4. Council will coordinate with resource management agencies regarding the relationship between subbasin planning and resource management planning 5. Council will coordinate with statewide/provincial/tribal coordination groups to establish appropriate coordination group(s) within each state. Conduct progress reviews; monitor funding allocations, and schedule progress on a statewide level. 6. Council will review and track progress of subbasin level work region-wide. Review statements of work, budgets and schedules for subbasin lead entities. Review subbasin allocation funding, progress reports and draft subbasin plans. Meet quarterly with statewide/provincial/tribal Coordination groups to review overall statewide progress. 7. Council will review the award of contracts with secondary entities within subbasins (co-leads or supporting organization) 8. Council will manage all subbasin and statewide/provincial/tribal level contracts. Prepare contracts and proposed amendments. Pay contractor invoices and prepare expenditure reports. Prepare and execute amendments to the master contract to reflect subcontract activities. 9. Council will initiate ISRP review and incorporate results into issue paper. 10. Council will initiate public review and incorporate results into issue paper. 11. Council will coordinate/consult with region's Indian Tribes for consistency with legal rights. 12. Council will coordinate with NMFS and USFWS for review and endorsement of subbasin plans for ESA use, where applicable. Incorporate results into issue paper. 13. Council will prepare final report and recommendation to Council for adoption of each subbasin plan. 14. Council will adopt subbasin plans into Fish and Wildlife Program, applying substantive and procedural requirements of the NW Power Act. II. Regional Technical Support - Council will provide regional-level technical support basin-wide (assessment, coordination and information management) and provide out-of-subbasin assumptions. 1. Council will establish a regional technical group that will meet regularly to coordinate technical products associated for subbasin planning. 2. Council will provide staff support for regional and subbasin-level technical support. 3. Council will establish and maintain a liaison to coordinate subbasin planning with NMFS's Technical Review Teams and USFWS's bull trout recovery teams. 4. Council will provide written guidance to statewide/provincial/tribal technical support teams regarding procedures for implementing subbasin and province-level biological assessments, including sample products and descriptions of information sources and available analytical tools. 5. Council will establish and maintain an Ecosystem Diagnosis and Treatment (EDT) support function, including providing appropriate training for technical support team members in the scientific concepts and analytical tools that will be applied to subbasin assessment. 6. Council will establish and maintain a wildlife technical support function. 7. Council will maintain and enhance the Internet version of the EDT model, including EDT databases and online tools. 8. Council will establish and maintain a web-based system for accessing and transferring subbasin planning information. 9. Council will, through Bonneville, establish and maintain a system for managing and accessing spatial data over the Internet using Internet Mapping System (IMS) software. 10. Council will, through Bonneville, produce and provide basic geographic information system (GIS) products and services for subbasin planning. 11. Council will provide fish productivity and related species data to planners. 12. Council will provide library services to subbasin planning including dissemination of literature and storage of subbasin plan products.

2005: 1. Council will provide support to Regional Group by staffing and conducting meetings with regional coordination group; make reimbursements for necessary expenses for Regional Group meetings. 2. Council will coordinate with statewide/provincial/tribal coordination groups to establish appropriate coordination group(s) within each state. Conduct progress reviews; monitor funding allocations, and schedule progress on a statewide level. 3. Council will adopt subbasin plans into Fish and Wildlife Program, applying substantive and procedural requirements of the NW Power Act. II. Regional Technical Support - Council will provide regional-level technical support basin-wide (assessment, coordination and information management) and provide out-of-subbasin assumptions. 1. Council will provide staff support for regional and subbasin-level technical support. 2. Council will establish and maintain a liaison to coordinate subbasin planning with NMFS's Technical Review Teams and USFWS's bull trout recovery teams. 3. Council will establish and maintain an Ecosystem Diagnosis and Treatment (EDT) support function, including providing appropriate training for technical support team members in the scientific concepts and analytical tools that will be applied to subbasin assessment. 4. Council will establish and maintain a wildlife technical support function. 5. Council will maintain and enhance the Internet version of the EDT model, including EDT databases and online tools. 6. Council will establish and maintain a web-based system for accessing and transferring subbasin planning information. 7. Council will, through Bonneville, establish and maintain a system for managing and accessing spatial data over the Internet using Internet Mapping System (IMS) software. 8. Council will, through Bonneville, produce and provide basic geographic information system (GIS) products and services for subbasin planning. 9. Council will provide fish productivity and related species data to planners. 10. Council will provide library services to subbasin planning including dissemination of literature and storage of subbasin plan products.

Estuary Subbasin Planning and Assessment

251 **Lower Columbia River Habitat Assessment and Mapping (BPA)**

2003: 1. Complete construction of GIS data layers 2. Classified habitat data in GIS format on CD and other formats 3. Hold workshop, develop recommendations for final report 4. Final report on CD and hard copy to include, methods, results of habitat classification, results of habitat change over time, results of landscape analysis; and recommendations on habitat project selection, possible indicators and future actions

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

3. Protect & Enhance Estuary Habitat

254 **Subbasin Planning, Subbasin Level (BPA)**

2003: Council will administer contracts for subbasin level planning. □□Council will contract with subbasin lead entities to develop subbasin level plans.

2004: Council will administer contracts for subbasin level planning. □□Council will contract with subbasin lead entities to develop subbasin level plans.

Estuary Watershed Health

251 **Lower Columbia River Habitat Assessment and Mapping (BPA)**

2003: 1. Complete construction of GIS data layers 2. Classified habitat data in GIS format on CD and other formats 3. Hold workshop, develop recommendations for final report 4. Final report on CD and hard copy to include, methods, results of habitat classification, results of habitat change over time, results of landscape analysis; and recommendations on habitat project selection, possible indicators and future actions

537 **Estuary Mapping (CORPS)**

2003: Image Classification-classify satellite imagery for habitat type□Image Classification-hyperspectral imagery □Image Analysis

Mainstem Subbasin Planning and Assessment

254 **Subbasin Planning, Subbasin Level (BPA)**

2003: Council will administer contracts for subbasin level planning. □□Council will contract with subbasin lead entities to develop subbasin level plans.

2004: Council will administer contracts for subbasin level planning. □□Council will contract with subbasin lead entities to develop subbasin level plans.

2003-2007 Project Deliverables by Strategy and Substrategy

Habitat

3. Protect and Enhance Estuary Habitat

253 **Subbasin Planning, Statewide/Provincial/Tribal Level (BPA)**

2003: I . Statewide (Provincial)/Tribal Coordination□Council will provide support and funding for statewide/provincial/tribal coordination and project management for subbasin planning within each state.□□·□Statewide/provincial/tribal groups in ID, MT, OR, WA will perform (a.) project management functions within each state and (b.) coordination. Specific tasks are outlined in detailed budget.□□II. Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams□□·□Council will assist with establishing technical support teams within each state, and further assist with developing a strategy that enables those teams to provide technical support to provinces and subbasins.□·□Technical support team(s) in Idaho will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Montana will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Oregon will complete an assessment through the tasks identified in attached detailed budget.□·□Technical support team(s) in Washington will complete an assessment through the tasks identified in attached detailed budget.

2004: Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams□□·□Council will assist with establishing technical support teams within each state, and further assist with developing a strategy that enables those teams to provide technical support to provinces and subbasins.

2005: Statewide Technical Support□Council will provide analytical products and technical support to statewide coordination group and subbasin technical support teams

Estuary Watershed Health

536 **Estuary General Investigation Study (CORPS)**

2003: Initiate Feasibility Study and Environmental Impact Statement

2004: Draft EIS complete

2005: Draft EIS public review

2006: Draft Feasibility Report

2007: Final Feasibility Report, EIS

539 **Research: Columbia River Estuary (CORPS)**

2003: Review research, modify research needs

2004: Review research, modify research needs

2003-2007 Project Deliverables by Strategy and Substrategy

Harvest

Develop Fishing Techniques

1.1 Gear efficacy testing and fishery integration on the mainstem Columbia/Snake rivers

296 **Evaluate Live Capture Selective Harvest Methods (BPA)**

2003: 1.Continue to estimate and compare the long-term survival of adult spring chinook captrued and released from tooth-tangle nets. 2. Review and refine objectives as appropriate based upon results from 2002.

2004: TBD

2.2 Alternative modeling systems that work in the context of selective fisheries

296 **Evaluate Live Capture Selective Harvest Methods (BPA)**

2003: 1.Continue to estimate and compare the long-term survival of adult spring chinook captrued and released from tooth-tangle nets. 2. Review and refine objectives as appropriate based upon results from 2002.

2004: TBD

Harvest Management Decisions

2.1 Improved escapement assessments and other critical population-specific data to support conservation-bas

299 **Removal of Ghost Fishing Nets - Feasibility (BPA)**

2003: TBD

2.3 Identify sources of unaccounted harvest-related mortality

299 **Removal of Ghost Fishing Nets - Feasibility (BPA)**

2003: TBD

2003-2007 Project Deliverables by Strategy and Substrategy

Harvest

Sustainable Fisheries

3.2 Potential alternative/terminal fishing locations

292 **Select Area Fishery Evaluation (BPA)**

2003: 1. Scope suitabiltiy of expanding sites for rearing and release of salmon at six potential sites. 2. Continue to collect and anlayze homing and straying information from current net-pen and lower Columbia River hatchery programs. 3. Evaluate the suitability of use of Willamette and Cowlitz stock spring chinook, SAB (Rogue Stock) fall chinook for optimal use in select area fishing sites.

2004: TBD

2005: TBD

Supplementation/Outplanting Fisheries

292 **Select Area Fishery Evaluation (BPA)**

2003: 1. Scope suitabiltiy of expanding sites for rearing and release of salmon at six potential sites. 2. Continue to collect and anlayze homing and straying information from current net-pen and lower Columbia River hatchery programs. 3. Evaluate the suitability of use of Willamette and Cowlitz stock spring chinook, SAB (Rogue Stock) fall chinook for optimal use in select area fishing sites.

2004: TBD

2005: TBD

2003-2007 Project Deliverables by Strategy and Substrategy

Hatchery

1. Use a Safety Net Program

Safety Net

41 **Northeast Oregon Hatchery Project (BPA)**

2003: 1) Issue draft and final EIS and ROD; 2) ChS facility final design; 3) Start construction on Lostine Hatchery; 4) Develop sockeye HMP.

2004: 1) Complete Lostine hatchery; 2) Start Imnaha (Marks Ranch) facility construction.

2005: 1) Complete Marks Ranch; 2) Imnaha satellite improvements; 3) Lostine adult collection facility; 4) Lookinglass Hatchery modifications).

2006: NA - reference 1998-007-02 O&M

43 **Northeast Oregon Hatchery Project (BPA)**

2003: 1) Provide input on development of Master Plans, predesign, NEPA and final design for enhancement of anadromous salmonids in the Imnaha, Grande Ronde

2004: 1) Provide input on development of Master Plans, predesign, NEPA and final design for enhancement of anadromous salmonids in the Imnaha, Grande Ronde

2005: 1) Provide input on development of Master Plans, predesign, NEPA and final design for enhancement of anadromous salmonids in the Imnaha, Grande Ronde

2006: 1) Provide input on development of Master Plans, predesign, NEPA and final design for enhancement of anadromous salmonids in the Imnaha, Grande Ronde

47 **Grande Ronde Supplementation - Lostine River Spring Chinook (BPA)**

2003: 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report

2004: 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report

2005: 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report

2006: 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report

2007: 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report

2003-2007 Project Deliverables by Strategy and Substrategy

Hatchery

1. Use a Safety Net Program

49 **Grande Ronde Satellite Facility O&M (BPA)**

2003: 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report

2004: 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report.

2005: 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report.

2006: 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report.

2007: 1) Annual operating plan finalized; 2) Adult spring chinook broodstock collected; 3) Fish transported for holding and to spawning grounds; 4) Juveniles acclimated and released to stream; 5) Annual report.

51 **Grande Ronde Spring Chinook Supplementation Program (BPA)**

2003: 1) Annual operating plan; 2) Collect ChS broodstock from Lostine, uper Grande Ronde and Catherine Creek traps and transport to Lookingglass for holding; 3) Hold and spawn broodstock at Lookingglass; 4) Incubate and rear 360,000 endemic ChS juveniles using conventional methods; 5) Transport juveniles back to acclimation sites for acclimation and release.

2004: 1) Annual operating plan; 2) Collect ChS broodstock from upper Grande Ronde and Catherine Creek traps and transport to Lookingglass for holding; 3) Hold and spawn broodstock at Lookingglass; 4) Incubate and rear juveniles; 5) Transport juveniles back to acclimation sites for acclimation and release.

2005: 1) Annual operating plan; 2) Collect ChS broodstock from upper Grande Ronde and Catherine Creek traps and transport to Lookingglass for holding; 3) Hold and spawn broodstock at Lookingglass; 4) Incubate and rear juveniles; 5) Transport juveniles back to acclimation sites for acclimation and release.

2006: 1) Annual operating plan; 2) Collect ChS broodstock from upper Grande Ronde and Catherine Creek traps and transport to Lookingglass for holding; 3) Hold and spawn broodstock at Lookingglass; 4) Incubate and rear juveniles; 5) Transport juveniles back to acclimation sites for acclimation and release.

2007: 1) Annual operating plan; 2) Collect ChS broodstock from upper Grande Ronde and Catherine Creek traps and transport to Lookingglass for holding; 3) Hold and spawn broodstock at Lookingglass; 4) Incubate and rear juveniles; 5) Transport juveniles back to acclimation sites for acclimation and release.

57 **Northeast Oregon Hatchery Project (BPA)**

2003: 1) Issue draft and final EIS and ROD; 2) ChS facility final design; 3) Start construction on Lostine Hatchery; 4) Develop sockeye HMP.

2004: 1) Complete Lostine hatchery; 2) Start Imnaha (Marks Ranch) facility construction.

2005: 1) Complete Marks Ranch; 2) Imnaha satellite improvements; 3) Lostine adult collection facility; 4) Lookinglass Hatchery modifications).

2006: NA - reference 1998-007-02 O&M

2003-2007 Project Deliverables by Strategy and Substrategy

Hatchery

1. Use a Safety Net Program

158 **Genetic Analysis of Onchorhynchus nerka (Modifed to Include Chinook Salmon) (BPA)**

2003: Monitoring and evaluation of Snake River sockeye population genetics, assessment of mitochondrial DNA variation among Salmon River spring/summer chinook salmon, and assessment of nuclear genetic variation among Salmon River spring/summer chinook salmon

2004: Monitoring and evaluation of Snake River sockeye population genetics, assessment of mitochondrial DNA variation among Salmon River spring/summer chinook salmon, and assessment of nuclear genetic variation among Salmon River spring/summer chinook salmon

2005: Monitoring and evaluation of Snake River sockeye population genetics, assessment of mitochondrial DNA variation among Salmon River spring/summer chinook salmon, and assessment of nuclear genetic variation among Salmon River spring/summer chinook salmon

2006: Monitoring and evaluation of Snake River sockeye population genetics, assessment of mitochondrial DNA variation among Salmon River spring/summer chinook salmon, and assessment of nuclear genetic variation among Salmon River spring/summer chinook salmon

2007: Monitoring and evaluation of Snake River sockeye population genetics, assessment of mitochondrial DNA variation among Salmon River spring/summer chinook salmon, and assessment of nuclear genetic variation among Salmon River spring/summer chinook salmon

160 **Redfish Lake Sockeye Salmon Captive Broodstock Program (BPA)**

2003: Develop captive broodstocks from Redfish Lake anadromous sockeye salmon. Culture broodstocks. Determine the contribution hatchery-produced sockeye salmon make toward recovery. Describe O. nerka population characteristics for Sawtooth Valley lakes in relation to carrying capacity and broodstock program supplementation efforts. Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program.Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program. Transfer technology.

2004: Develop captive broodstocks from Redfish Lake anadromous sockeye salmon. Culture broodstocks. Determine the contribution hatchery-produced sockeye salmon make toward recovery. Describe O. nerka population characteristics for Sawtooth Valley lakes in relation to carrying capacity and broodstock program supplementation efforts. Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program.Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program. Transfer technology.

2005: Develop captive broodstocks from Redfish Lake anadromous sockeye salmon. Culture broodstocks. Determine the contribution hatchery-produced sockeye salmon make toward recovery. Describe O. nerka population characteristics for Sawtooth Valley lakes in relation to carrying capacity and broodstock program supplementation efforts. Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program.Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program. Transfer technology.

2006: Develop captive broodstocks from Redfish Lake anadromous sockeye salmon. Culture broodstocks. Determine the contribution hatchery-produced sockeye salmon make toward recovery. Describe O. nerka population characteristics for Sawtooth Valley lakes in relation to carrying capacity and broodstock program supplementation efforts. Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program.Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program. Transfer technology.

2007: Develop captive broodstocks from Redfish Lake anadromous sockeye salmon. Culture broodstocks. Determine the contribution hatchery-produced sockeye salmon make toward recovery. Describe O. nerka population characteristics for Sawtooth Valley lakes in relation to carrying capacity and broodstock program supplementation efforts. Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program.Determine the origin of wild and broodstock O. nerka to provide maximum effectiveness in their utilization within the broodstock program. Transfer technology.

2003-2007 Project Deliverables by Strategy and Substrategy

Hatchery

1. Use a Safety Net Program

161 **Redfish Lake Sockeye Salmon Captive Broodstock Rearing and Research (BPA)**

2003: Maintain anadromous Redfish Lake sockeye salmon in a safety-net captive broodstock program and provide pre-spawning adults, eyed eggs, and juveniles to aid recovery of this ESA-listed stock in Idaho.

2004: Maintain anadromous Redfish Lake sockeye salmon in a safety-net captive broodstock program and provide pre-spawning adults, eyed eggs, and juveniles to aid recovery of this ESA-listed stock in Idaho.

2005: Maintain anadromous Redfish Lake sockeye salmon in a safety-net captive broodstock program and provide pre-spawning adults, eyed eggs, and juveniles to aid recovery of this ESA-listed stock in Idaho.

2006: Maintain anadromous Redfish Lake sockeye salmon in a safety-net captive broodstock program and provide pre-spawning adults, eyed eggs, and juveniles to aid recovery of this ESA-listed stock in Idaho.

2007: Maintain anadromous Redfish Lake sockeye salmon in a safety-net captive broodstock program and provide pre-spawning adults, eyed eggs, and juveniles to aid recovery of this ESA-listed stock in Idaho.

164 **Safety-Net Coordinator (BPA)**

2003: Coordination and facilitation of the completion of the four-step artificial propagation contingency planning process described in RPA 175 (Safety-Net Artificial Propagtion Program [SNAPP]). Integration of SNAPP planning with Interior Columbia TRT planning.

165 **Safety-Net Artificial Propagation Program - WDFW (BPA)**

2003: FY 2003 deliverables and budget dependent upon results of Extinction Risk Analysis (SNAPP Step 1) to be conducted in FY 2002.

166 **Safety-Net Artificial Propagation Program - CRITFC (BPA)**

2003: FY 2003 deliverables and budget dependent upon results of Extinction Risk Analysis (SNAPP Step 1) to be conducted in FY 2002.

167 **Safety-Net Artificial Propagation Program - NPT (BPA)**

2003: FY 2003 deliverables and budget dependent upon results of Extinction Risk Analysis (SNAPP Step 1) to be conducted in FY 2002.

168 **Safety-Net Artificial Propagation Program - IDFG (BPA)**

2003: FY 2003 deliverables and budget dependent upon results of Extinction Risk Analysis (SNAPP Step 1) to be conducted in FY 2002.

169 **Safety-Net Artificial Propagation Program - SBT (BPA)**

2003: FY 2003 deliverables and budget dependent upon results of Extinction Risk Analysis (SNAPP Step 1) to be conducted in FY 2002.

2003-2007 Project Deliverables by Strategy and Substrategy

Hatchery

1. Use a Safety Net Program

171 **Johnson Creek Artificial Propagation & Enhancement (BPA)**

2003: 1) Rear 10,000 Johnson Creek Summer Chinook smolts 2) Construct rearing facilities 3) Collect & analyze recruits per spawner 4) Collect & analyze information on abundance, selected life history patterns, & spatial distribution of Johnson Creek juvenile summer chinook salmon & steelhead 5) Collect & analyze baseline information of genetic patterns of, supplementation vs. natural summer chinook salmon & steelhead 6) Monitor smolt production in the hatchery to evaluate health status, growth rates, & condition factors to compare supplementatin fish with natural fish 7) Determine effectiveness of the supplemented hatchery summer chinook salmon to increase the overall population of Johnson Creek summer chinook salmon & compare to natural fish 8) Prepare 3 Quarterly Reports and an annual report

2004: 1) Rear 100,000 Johnson Creek Summer Chinook smolts 2) Construct hatchery & acclimation facilities 3) Collect & analyze recruits per spawner 4) Collect & analyze information on abundance, selected life history patterns, & spatial distribution of Johnson Creek juvenile summer chinook salmon & steelhead 5) Collect & analyze baseline information of genetic patterns of, supplementation vs. natural summer chinook salmon & steelhead 6) Monitor smolt production in the hatchery to evaluate health status, growth rates, & condition factors to compare supplementation fish with natural fish 7) Determine effectiveness of the supplemented hatchery summer chinook salmon to increase the overall population of Johnson Creek summer chinook salmon & compare to natural fish 8) Prepare 3 Quarterly Reports and an annual report

2005: 1) Rear 100,000 Johnson Creek Summer Chinook smolts 2) Collect & analyze recruits per spawner 3) Collect & analyze information on abundance, selected life history patterns, & spatial distribution of Johnson Creek juvenile summer chinook salmon & steelhead 4) Collect & analyze baseline information of genetic patterns of, supplementation vs. natural summer chinool salmon & steelhead 5) Monitor smolt production in the hatchery to evaluate health status, growth rates, & condition factors to compare supplementation fish with natural fish 6) Determine effectiveness of the supplemented hatchery summer chinook salmon to increase the overall population of Johnson Creek summer chinook salmon & compare to natural fish 7) Prepare 3 Quarterly Reports and an annual report

2006: 1) Rear 100,000 Johnson Creek Summer Chinook smolts 2) Collect & analyze recruits per spawner 3) Collect & analyze information on abundance, selected life history patterns, & spatial distribution of Johnson Creek juvenile summer chinook salmon & steelhead 4) Collect & analyze baseline information of genetic patterns of, supplementation vs. natural summer chinool salmon & steelhead 5) Monitor smolt production in the hatchery to evaluate health status, growth rates, & condition factors to compare supplementation fish with natural fish 6) Determine effectiveness of the supplemented hatchery summer chinook salmon to increase the overall population of Johnson Creek summer chinook salmon & compare to natural fish 7) Prepare 3 Quarterly Reports and an annual report

2007: 1) Rear 100,000 Johnson Creek Summer Chinook smolts 2) Collect & analyze recruits per spawner 3) Collect & analyze information on abundance, selected life history patterns, & spatial distribution of Johnson Creek juvenile summer chinook salmon & steelhead 4) Collect & analyze baseline information of genetic patterns of, supplementation vs. natural summer chinook salmon & steelhead 5) Monitor smolt production in the hatchery to evaluate health status, growth rates, & condition factors to compare supplementation fish with natural fish 6) Determine effectiveness of the supplemented hatchery summer chinook salmon to increase the overall population of Johnson Creek summer chinook salmon & compare to natural fish 7) Prepare 3 Quarterly Reports and an annual report

172 **Listed Stock Chinook Salmon Gamete Preservation (BPA)**

2003: 1) Collect male chinook salmon gamete samples; strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 30 samples/natural spawning aggregate/yr 2) Collect male steelhead gamete samples. Strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 20 samples/natural spawning aggregate per yr. 3) Construct a Regional Salmonid Germplasm Repository for populations listed under the ESA.

2004: 1) Collect male chinook salmon gamete samples; strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 30 samples/natural spawning aggregate/yr 2) Collect male steelhead gamete samples. Strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 20 samples/natural spawning aggregate per yr

2005: 1) Collect male chinook salmon gamete samples; strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 30 samples/natural spawning aggregate/yr 2) Collect male steelhead gamete samples. Strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 20 samples/natural spawning aggregate per yr

2006: 1) Collect male chinook salmon gamete samples; strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 30 samples/natural spawning aggregate/yr 2) Collect male steelhead gamete samples. Strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 20 samples/natural spawning aggregate per yr

2007: 1) Collect male chinook salmon gamete samples; strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 30 samples/natural spawning aggregate/yr 2) Collect male steelhead gamete samples. Strive for 100 samples/spawning aggregate in hatchery scenarios every yr and 20 samples/natural spawning aggregate per yr

2003-2007 Project Deliverables by Strategy and Substrategy

Hatchery

1. Use a Safety Net Program

173 **Pittsburgh Landing Fall Chinook Acclimation Facility (BPA)**

2003: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 400,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2004: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 400,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2005: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 400,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2006: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 400,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2007: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 400,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

174 **Captive Broodstock Artificial Propagation (BPA)**

2003: 1) Coordinate project with Federal & State agencies 2) M&E program with ODFW & CTUIR 3) Monitor abundance & timing of migratation of adult chinook salmon into the Lostine R 4) M&E the F1 generation offspring 5) Prepare quarterly reports and annual report

2004: 1) Coordinate project with Federal & State agencies 2) M&E program with ODFW & CTUIR 3) Monitor abundance & timing of migratation of adult chinook salmon into the Lostine R 4) M&E the F1 generation offspring 5) Prepare quarterly reports and annual report

2005: 1) Coordinate project with Federal & State agencies 2) M&E program with ODFW & CTUIR 3) Monitor abundance & timing of migratation of adult chinook salmon into the Lostine R 4) M&E the F1 generation offspring 5) Prepare quarterly reports and annual report

2006: 1) Coordinate project with Federal & State agencies 2) M&E program with ODFW & CTUIR 3) Monitor abundance & timing of migratation of adult chinook salmon into the Lostine R 4) M&E the F1 generation offspring 5) Prepare quarterly reports and annual report

2007: 1) Coordinate project with Federal & State agencies 2) M&E program with ODFW & CTUIR 3) Monitor abundance & timing of migratation of adult chinook salmon into the Lostine R 4) M&E the F1 generation offspring 5) Prepare quarterly reports and annual report

175 **Capt. John Rapid's Fall Chinook Acclimation Facility (BPA)**

2003: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2004: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2005: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2006: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2007: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2003-2007 Project Deliverables by Strategy and Substrategy

Hatchery

1. Use a Safety Net Program

176 **Big Canyon Fall Chinook Acclimation Facility (BPA)**

2003: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2004: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2005: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2006: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

2007: 1) Acclimate/release 150,000 Snake River Fall Chinook yearlings from Lyons Ferry Hatchery 2) Submit quarterly reports and annual report 3) Acclimate/release 1,000,000 sub-yearlings Snake R Fall Chinook from Lyons Ferry Hatchery

266 **Tucannon River Spring Chinook Captive Broodstock Program (BPA)**

2003: Increase in M&E as data become available. Smaller % increase in O&M.

2004: Similar expected from budget projection.

2005: Similar expected from budget projection.

2006: Decreased scope due to fewer fish culture activities.

2007: Unknown

276 **Grande Ronde Basin Spring Chinook Salmon Captive Broodstock Program (BPA)**

2003: High risk of extinction due to small size of population, warrants management of actions to preserve & maintain genetic material of Snake River Spring/Summer-run Chinook. Implement captive broodstock programs and associated research, monitoring, evaluation, and fish health for spring chinooksalmon populations in Catherine Creek, upper Grande Ronde and Lostine rivers, to conserve genetic diversity and assist in recovery

2004: High risk of extinction due to small size of population, warrants management of actions to preserve & maintain genetic material of Snake River Spring/Summer-run Chinook. Implement captive broodstock programs and associated research, monitoring, evaluation, and fish health for spring chinooksalmon populations in Catherine Creek, upper Grande Ronde and Lostine rivers, to conserve genetic diversity and assist in recovery

2005: High risk of extinction due to small size of population, warrants management of actions to preserve & maintain genetic material of Snake River Spring/Summer-run Chinook. Implement captive broodstock programs and associated research, monitoring, evaluation, and fish health for spring chinooksalmon populations in Catherine Creek, upper Grande Ronde and Lostine rivers, to conserve genetic diversity and assist in recovery

2006: High risk of extinction due to small size of population, warrants management of actions to preserve & maintain genetic material of Snake River Spring/Summer-run Chinook. Implement captive broodstock programs and associated research, monitoring, evaluation, and fish health for spring chinooksalmon populations in Catherine Creek, upper Grande Ronde and Lostine rivers, to conserve genetic diversity and assist in recovery

2007: High risk of extinction due to small size of population, warrants management of actions to preserve & maintain genetic material of Snake River Spring/Summer-run Chinook. Implement captive broodstock programs and associated research, monitoring, evaluation, and fish health for spring chinooksalmon populations in Catherine Creek, upper Grande Ronde and Lostine rivers, to conserve genetic diversity and assist in recovery

2003-2007 Project Deliverables by Strategy and Substrategy

Hatchery

1. Use a Safety Net Program

277 **Idaho Chinook Salmon Captive Rearing (BPA)**

2003: Develop captive rearing techniques for chinook salmon and evaluate the success and utility of captive rearing for maintaining stock structure and minimum number of adult spawners in three drainages

2004: Develop captive rearing techniques for chinook salmon and evaluate the success and utility of captive rearing for maintaining stock structure and minimum number of adult spawners in three drainages

2005: Develop captive rearing techniques for chinook salmon and evaluate the success and utility of captive rearing for maintaining stock structure and minimum number of adult spawners in three drainages

2006: Develop captive rearing techniques for chinook salmon and evaluate the success and utility of captive rearing for maintaining stock structure and minimum number of adult spawners in three drainages

2007: Develop captive rearing techniques for chinook salmon and evaluate the success and utility of captive rearing for maintaining stock structure and minimum number of adult spawners in three drainages

279 **Manchester Spring Chinook Broodstock Project (BPA)**

2003: same

2004: same

2005: same

2006: same

2007: same

2003-2007 Project Deliverables by Strategy and Substrategy

Hatchery

2. Hatchery Reform

2.1 Develop HGMPs/Reform

274 **Artificial Production Review Evaluation (APRE) (BPA)**

2003: 6) Collect data/information. 7) Convene 2-day review workshop. 8) Revise data summaries with workshop review results. 9) Provide APRE draft recommendations. 10) Review APRE recommendations. 11) Finalize and produce a report with recommendations for APRE. 12) Finalize Phase 1 of the HGMPs for all Columbia River hatcheries funded by BPA or Mitchell Acts. Note: Final HGMPs are schedule to be completed in Sep 2003

336 **HGMP Development for Bonneville Fish Hatchery and Spring Creek National Fish Hatchery (CORPS)**

2003: HGMPs for Bonneville Fish Hatchery and Spring Creek National Fish Hatchery.

2005: Implement Hatchery Reforms

2006: Implement Hatchery Reforms

2007: Implement Hatchery Reforms

437 **HGMP Funding & Development-Leavenworth (USBR)**

2003: Complete HGMPs, submit to NMFS for review and approval.

438 **HGMPs Implementation - Leavenworth (USBR)**

2003: Implement any reforms in approved HGMP's

2004: Implement any reforms in approved HGMP's

2005: Operate according to approved HGMP's

2006: Operate according to approved HGMP's

2007: Operate according to approved HGMP's

2003-2007 Project Deliverables by Strategy and Substrategy

Hatchery

5. Data Management System

177 **Coded-Wire Tag Recovery Program (BPA)**

2003: 1. Recover CWTs from adults returning to the Columbia River. 2. Estimate total number of salmon landed in Columbia River commercial and sport fisheries and returning to escapement areas. 3. Summarize and analyze data collected under Objectives 1 and 2. 4. CWT Recovery in Oregon Ocean Chinook and coho Fisheries . 5. Determine total Oregon ocean commercial troll and sport effort and landings by time/area from expansions of sampled data in both fisheries. 6. Summarize annual effort, landings, and CWT data to determine stocks represented in Oregon ocean salmonid fisheries. 7. Process fish heads containing CWTs. 8. CWT Recovery Data Delivery. 9. Provide regional CWT data management. 10. Provide regional coordination of marking programs.

2004: 1. Recover CWTs from adults returning to the Columbia River. 2. Estimate total number of salmon landed in Columbia River commercial and sport fisheries and returning to escapement areas. 3. Summarize and analyze data collected under Objectives 1 and 2. 4. CWT Recovery in Oregon Ocean Chinook and coho Fisheries . 5. Determine total Oregon ocean commercial troll and sport effort and landings by time/area from expansions of sampled data in both fisheries. 6. Summarize annual effort, landings, and CWT data to determine stocks represented in Oregon ocean salmonid fisheries. 7. Process fish heads containing CWTs. 8. CWT Recovery Data Delivery. 9. Provide regional CWT data management. 10. Provide regional coordination of marking programs.

2005: 1. Recover CWTs from adults returning to the Columbia River. 2. Estimate total number of salmon landed in Columbia River commercial and sport fisheries and returning to escapement areas. 3. Summarize and analyze data collected under Objectives 1 and 2. 4. CWT Recovery in Oregon Ocean Chinook and coho Fisheries . 5. Determine total Oregon ocean commercial troll and sport effort and landings by time/area from expansions of sampled data in both fisheries. 6. Summarize annual effort, landings, and CWT data to determine stocks represented in Oregon ocean salmonid fisheries. 7. Process fish heads containing CWTs. 8. CWT Recovery Data Delivery. 9. Provide regional CWT data management. 10. Provide regional coordination of marking programs.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

1.1 Mainstem juvenile passage enhancement

147 **Using Induced Turbulence to Assist Juvenile Migrating Salmon (BPA)**

2003: end of project

148 **Gas Bubble Disease Research and Monitoring of Juvenile Salmonids (BPA)**

2003: TBD

149 **Avian Predation on Juvenile Salmonids (BPA)**

2003: 1. Survey of managed Caspian tern colonies in the Columbia River estuary and along the WA coast; 2. Food habits, energy requirements, and smolt consumption rates of Caspian terns nesting in the estuary; 3. Foraging distribution and range, and habitat use of Caspian terns in the estuary and along the WA coast; 4. Survey of double-crested cormorants and glauscous-winged/western gulls nesting colonies on the mainstem above John Day Dam; 5. Food habits, energy requirements, and smolt consumption rates of double-crested cormorants. Increased emphasis on inland colonies and development of management alternatives to reduce predation in these locales.

235 **Statistical Support for Salmonid Survival Studies (CORPS)**

2003: 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2004: Expected to continue similar to 2003 - 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2005: Expected to continue similar to 2003 - 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2006: Expected to continue similar to 2003 - 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2007: Expected to continue similar to 2003 - 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

237 **Columbia River Basin PIT Tag Information System (BPA)**

2003: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2004: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2005: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2006: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2007: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

243 **Fish Passage Center (BPA)**

2003: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2004: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2005: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2006: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2007: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

320 **Cylindrical Dewatering Evaluation (CORPS)**

2003: P&S to remove prototype structure

2004: Remove prototype structure

343 **Little Goose Extended Submerged Bar Screens (CORPS)**

2003: Complete ESBS Improvements.

347 **Little Goose Trash Boom (CORPS)**

2003: Complete High Flow Sampling

2004: Complete Final Report

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

349 **Lower Granite Extended Submerged Bar Screens (CORPS)**

2003: Complete Improvements

351 **Lower Granite Juvenile Bypass System (CORPS)**

2003: Complete Design Documentation Report

2004: Complete P&S

2005: Initiate Construction

2006: Complete Construction

356 **Lower Monumental Extended Submerged Bar Screens (CORPS)**

2003: Prepare Design Documentation Report

2004: Construct ESBS/VBS Prototypes. Test

2005: Prepare P&S

2006: Prepare final DDR. Initate Contracts

2007: Complete Installations

358 **Lower Monumental Juvenile Bypass System Outfall (CORPS)**

2003: Complete Modeling and Technical Report

362 **Lower Snake River Juvenile Bypass System Improvements (CORPS)**

2003: Complete Initial Evaluation Report

2004: Complete Contract Documents

2005: Complete Construction

363 **McNary Extended Submerged Bar Screens (CORPS)**

2003: Project personnel complete ESBS improvements

365 **McNary Forebay Temperature Improvements (CORPS)**

2003: CFD Model development

2004: Technical Report

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

366 **McNary Juvenile Bypass System Outfall (CORPS)**

2003: Complete Technical Report

367 **McNary Juvenile Fish Facility Debris (CORPS)**

2003: Acquire debris removal craft.

2004: Design final gatewell system

2005: Install final gatewell system

370 **McNary Juvenile Survival (CORPS)**

2003: 1800

2004: 2000

376 **Separator Evaluation (CORPS)**

2003: Perform outyear testing if required

2004: Perform outyear testing if required

2005: Perform outyear testing if required

2006: Perform outyear testing if required

2007: Complete Removal

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

483 **Northern Pikeminnow Management Program (BPA)**

2003: 1. Decrease predation on juvenile salmonids in the Columbia River basin by implementing a public sport-reward fishery for northern Pikeminnow in the lower Columbia and Snake rivers. 2. Decrease predation on juvenile salmonids in the Columbia River basin by implementing angling for northern Pikeminnow at lower Columbia and Snake river dams, and by implementing site-specific removal at other areas where they concentrate. 3. Estimate percent reduction in predation

2004: 1. Decrease predation on juvenile salmonids in the Columbia River basin by implementing a public sport-reward fishery for northern Pikeminnow in the lower Columbia and Snake rivers. 2. Decrease predation on juvenile salmonids in the Columbia River basin by implementing angling for northern Pikeminnow at lower Columbia and Snake river dams, and by implementing site-specific removal at other areas where they concentrate. 3. Estimate percent reduction in predation 4. Conduct full biological evaluation to determine extent, if any, of intra-or interspecific compensation (3-5 year interval).

2005: 1. Decrease predation on juvenile salmonids in the Columbia River basin by implementing a public sport-reward fishery for northern Pikeminnow in the lower Columbia and Snake rivers. 2. Decrease predation on juvenile salmonids in the Columbia River basin by implementing angling for northern Pikeminnow at lower Columbia and Snake river dams, and by implementing site-specific removal at other areas where they concentrate. 3. Estimate percent reduction in predation

2006: 1. Decrease predation on juvenile salmonids in the Columbia River basin by implementing a public sport-reward fishery for northern Pikeminnow in the lower Columbia and Snake rivers. 2. Decrease predation on juvenile salmonids in the Columbia River basin by implementing angling for northern Pikeminnow at lower Columbia and Snake river dams, and by implementing site-specific removal at other areas where they concentrate. 3. Estimate percent reduction in predation

2007: 1. Decrease predation on juvenile salmonids in the Columbia River basin by implementing a public sport-reward fishery for northern Pikeminnow in the lower Columbia and Snake rivers. 2. Decrease predation on juvenile salmonids in the Columbia River basin by implementing angling for northern Pikeminnow at lower Columbia and Snake river dams, and by implementing site-specific removal at other areas where they concentrate. 3. Estimate percent reduction in predation

502 **Bonneville 2nd PH surface bypass (corner collector) (CORPS)**

2003: continue construction

2004: complete construction, initiate post-const. monitoring

2005: continue monitoring

2006: complete monitoring

504 **Bonneville 2nd PH FGE improvements (CORPS)**

2003: complete evaluations , initiate P&S for permanent facilities if warranted

2004: initiate construction (tentative)

2005: complete construction (tentative)

2006: complete post-construction monitoring (tentative)

507 **Bonneville flat plate detector (CORPS)**

2003: continue operation

2004: continue operation

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

509 **Bonneville 2nd PH gatewell debris removal (CORPS)**

2003: none

2004: P&S for test facility and contract award

2005: continue installation

2006: complete installation, initiate testing

515 **John Day Screens (CORPS)**

2003: complete prototype testing

2004: complete P&S for permanent screens, award contract (tentative)

2005: continue construction, test debris issues (tentative)

2006: continue construction (tentative)

2007: complete construction, 1st year post-construction tests (tentative)

518 **The Dalles sluiceway outfall relocation and emergency AWS (CORPS)**

2003: complete reaanlysis, update design report and make decision to proceed

2004: prepare P&S (tentative)

2005: complete P&S, initiate construction (tentative)

2006: continue construction (tentative)

2007: complete construction (tentative)

520 **Turbine passage studies (CORPS)**

2003: complete second Bonn MGR test, complete phase i, scope and initiate phase II

2004: TBD

2005: TBD

2006: TBD

2007: TBD

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

523 **Bonneville 1st PH FGE (CORPS)**

2003: testing w/new prototype porosity plate

2004: testing w/new prototype porosity plate

2005: initiate permanent ESBS installation (tentative)

2006: continue ESBS installation (tentative)

2007: complete ESBS installation (tentative)

524 **Bonneville 1st PH Surface Bypass (CORPS)**

2003: remove prototype PSC

2004: TBD, based on sluiceway testing in 03

2005: TBD

2006: TBD

2007: TBD

525 **Bonneville 1st PH JBS improvements (CORPS)**

2003: prepare construction plans and specifcations

2004: complete plans and specs, initiate construction (tentatve)

2005: continue construction

2006: complete constreuction, initiate monitoring

2007: continue monitoring

526 **Bonneville 2nd PH JBS improvements (CORPS)**

2003: complete follow-on improvements

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

530 **The Dalles surface bypass (CORPS)**

2003: roof test , complete prototype tests

2004: decsion to proceed with permanent construction, P&S , initiate construction

2005: continue construction

2006: continue construction

2007: complete construction, operational

545 **Lower Monumental Survival/Efficiency Study (CORPS)**

2004: Report of 2003 study

2005: Report of 2003 study

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

1.2 Mainstem adult passage enhancement

235 **Statistical Support for Salmonid Survival Studies (CORPS)**

2003: 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2004: Expected to continue similar to 2003 - 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2005: Expected to continue similar to 2003 - 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2006: Expected to continue similar to 2003 - 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2007: Expected to continue similar to 2003 - 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

237 **Columbia River Basin PIT Tag Information System (BPA)**

2003: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2004: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2005: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2006: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2007: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

243 **Fish Passage Center (BPA)**

2003: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2004: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2005: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2006: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2007: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

326 **Fish Ladder Temperature Evaluation (CORPS)**

2003: Complete Summary Report

327 **Fish Ladder Transition Pool Evaluation (CORPS)**

2003: Complete Final Report

331 **Ice Harbor Adult Pit (CORPS)**

2003: Construction complete.

332 **Ice Harbor Emergency Auxiliary Water Supply (CORPS)**

2003: Complete Phase 2 Construction - Install North Shore Pumps #1 #2 and #3.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

342 **Little Goose Auxiliary Water Supply (CORPS)**

2003: Initiate Construction

2004: Complete Construction

348 **Lower Granite Emergency Auxiliary Water Supply (CORPS)**

2003: Phase I Construction, Gear Reducer Demolition/Installation. Complete Construction

355 **Lower Monumental Auxiliary Water Supply (CORPS)**

2003: Complete P&S. Award Contract

2004: Initiate Construction

2005: Complete Construction

503 **Bonneville 2nd PH fish unit trash rake (CORPS)**

2003: complete construction

2004: complete post-construction evaluation

505 **Bonneville 2nd PH emergency AWS (CORPS)**

2003: complete construction

511 **John Day salmon holding and jumping (CORPS)**

2003: complete construction

2004: biological evaluation

2005: complete evaluations

512 **John Day Ladder Temperature (CORPS)**

2003: initiate alternatives and design report (tentative)

2004: complete design report, complete P&S (tentative)

2005: complete construction (tentative)

2006: complete post-construction tests (tentative)

2007: final report (tentative)

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

513 **John Day N. Shore AWS (CORPS)**

2003: complete design report, decision

2004: complete P&S, initiate construction (tentative)

2005: continue construction (tentative)

2006: complete construction

2007: biological evaluation

522 **Adult PIT tag program (Bonn, The dalles, John Day) (CORPS)**

2003: complete biological evaluations, initiate modifications to Bonn system, initiate design for John Day system

2004: complete installation at John Day, initiate design for the The Dalles system

2005: complete The Dalles installation

2006: complete evaluations

529 **The Dalles adult entrance channel dewatering mods (CORPS)**

2003: complete construction

1.3 Measures that address temperature/dissolve gas

312 **Adult Temperature Evaluation (CORPS)**

2003: Report on effects between MCN and LGR

2006: Final Report - Effects of Dworshak Releases

323 **Modify Dworshak National Fish Hatchery System 1 Reuse System (CORPS)**

2003: Finish construction of Phase 1 and Phase 2 modifications to hatchery.

344 **Little Goose Flow Deflectors (CORPS)**

2003: Complete Design. Award Construction Contract.

2004: Complete Construction.

350 **Lower Granite Flow Deflectors (CORPS)**

2003: Test General Model. Complete Technical Report

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

357 **Lower Monumental Flow Deflectors (CORPS)**

2003: Complete Deflector Construction

364 **McNary Flow Deflectors (CORPS)**

2003: Complete Design of North Shore Training Wall

2004: Complete Construction of Training Wall

365 **McNary Forebay Temperature Improvements (CORPS)**

2003: CFD Model development

2004: Technical Report

486 **Water Quality Plan (CORPS)**

2003: Implement components of WQP

2004: Review and direct component implementation of WQP

2005: Insure integration of NWPPC provincial review projects into WQP

2006: Review and modify components of WQP

2007: Review and adjust modifications to WQP

487 **Bonneville Spillway Flow Deflectors (CORPS)**

2003: complete decision on additional bays, initiate construction (tentative)

2004: complete construction (tentative)

2005: post-construction tests(tentative)

2006: call it a wrap up

512 **John Day Ladder Temperature (CORPS)**

2003: initiate alternatives and design report (tentative)

2004: complete design report, complete P&S (tentative)

2005: complete construction (tentative)

2006: complete post-construction tests (tentative)

2007: final report (tentative)

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

514 **John Day surface bypassspillway improvements (CORPS)**

2003: complete egress test

2004: award bay 1 and 20 spillway deflectors (tentative)

2005: complete deflectors, 1st year test (tentative)

2006: complete 2nd year test (tentative)

2007: decision to proceed w/ RSW, initiate construction (tentative)

527 **The Dalles spillway survival improvement s (CORPS)**

2003: construct spillwall(s) (tentative), test, complete alternatives analysis (tentative)

2004: potential additional tests and /or P&S for permanernt facilities (tentative)

2005: potential additional tests and /or P&S for permanernt facilities (tentative)

2006: potential permanent construction (tentative)

2007: potential permanent construction (tentative)

550 **Redudant TDG Monitors - Dworshak to McNary Dam (CORPS)**

2003: Procurement of additional TDG instruments/ Physical Infrastructure modifications

2004: Physical infrastructure modifications

2005: Ongoing QA/QC and Maintenance

2006: Ongoing QA/QC and Maintenance

2007: Ongoing QA/QC and Maintenance

551 **Review of Forebay Monitors Lower Granite to McNary (CORPS)**

2003: Begin field investigations and analysis, Identify recommended relocations

2004: Continue field investigations and analysis,Prepare memorandum and coordinate with agencies

2005: Implement field relocations

2006: Continue remaining relocations

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

552 **Dworshak Dissolved Gas Abatement Study (CORPS)**

2003: draft report

2004: Final Report

553 **Temperature Modeling Plan Alternative Snake River Operations (CORPS)**

2003: Phase 1 - Plan Development - Final Report

2004: Phase 2 - Model Development - Progress Report

2005: Phase 2 - Model Development - Progress Report

2006: Phase 2 - Baseline/Alternative Analysis -Progress Report

2007: Phase 2 - Alternative Analysis Draft Final Report

1.4 Project configuration RME

145 **New Marking and Monitoring Techniques (BPA)**

2003: 1) Continue development of small-stream PIT detection with capability of remote location. 2) Initiate development of a high-flow and high-Q PIT detection system for the Bonneville Corner Collector. 3) Initiate development of a next generation PIT detection transceiver with numerous additional capabilities.

2004: 1) Continue development of small-stream PIT detection with capability of remote location. 2) Continue development of a high-flow and high-Q PIT detection system for the Bonneville Corner Collector and other applications. 3) Continue development of a next generation PIT detection transceiver with numerous additional capabilities.

2005: 1) Continue development of small-stream PIT detection with capability of remote location. 2) Continue development of a high-flow and high-Q PIT detection system for various applications. 3) Complete development of a next generation PIT detection transceiver with numerous additional capabilities.

2006: 1) Complete development of a small-stream PIT detection system with capability of deployment in remote locations. 2) Continue development of various PIT detection systems as needed.

2007: 1) Continue development of various PIT detection systems as needed.

146 **Installation of Adult PIT-tag Detection Systems (BPA)**

2003: 1) Install adult PIT detection systems in all ladders at John Day, Little Goose, and Lower Monumental. 2) Design adult PIT detection systems at counting windows at Bonneville and McNary if determined to be necessary. 3) Cost-share the adult PIT detector installation at Priest Rapids and Chandler if determined to be necessary.

2004: 1) Install adult PIT detection systems at counting windows at Bonneville and McNary if determined to be necessary.

2005: 1) Improve adult PIT detection systems where necessary.

2006: Closeout project.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

312 **Adult Temperature Evaluation (CORPS)**

2003: Report on effects between MCN and LGR

2006: Final Report - Effects of Dworshak Releases

320 **Cylindrical Dewatering Evaluation (CORPS)**

2003: P&S to remove prototype structure

2004: Remove prototype structure

326 **Fish Ladder Temperature Evaluation (CORPS)**

2003: Complete Summary Report

354 **Lower Granite Surface Bypass and Collection (CORPS)**

2003: RSW Test with BGS installed.

2004: Multiple Deliverables. See Summary

2005: Multiple Deliverables. See Summary

2006: Multiple Deliverables. See Summary

2007: Multiple Deliverables. See Summary

376 **Separator Evaluation (CORPS)**

2003: Perform outyear testing if required

2004: Perform outyear testing if required

2005: Perform outyear testing if required

2006: Perform outyear testing if required

2007: Complete Removal

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

506 **Bonneville adult fallback (CORPS)**

2003: complete telemetry studies

2004: initiate design (tentative)

2005: complete design, P&S and initiate construction (tentative)

2006: continue construction (tentative)

2007: Complete construction, initiate testing (tentative)

508 **Bonneville juvenile fish studies (CORPS)**

2003: research report

2004: research report

2005: final research report

516 **John Day survival and passage efficiency studies (CORPS)**

2003: complete survival and efficiency tests

2004: initiate project configuration decision document

2005: complete decision document (tentative)

517 **Adult Lamprey Passage (CORPS)**

2003: complete season's test program

2004: initiate final design report

2005: complete design report and P&S, initiate construction

2006: complete constructin

2007: complete biological testing

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

519 **The Dalles project survival study (CORPS)**

2003: research report

2004: research report

2005: research report

2006: research report

2007: final research report

520 **Turbine passage studies (CORPS)**

2003: complete second Bonn MGR test, complete phase i, scope and initiate phase II

2004: TBD

2005: TBD

2006: TBD

2007: TBD

521 **Adult migration studies (CORPS)**

2003: continue adult passage telemetry and headburn studies and complete bioenergetic field work

2004: complete bioenergetic model , headburn evaluations, and telemetry study field work

2005: final headburn report, continue bioenergetic modeling

2006: final telemetry study report

544 **Juvenile salmon transportation evaluations (CORPS)**

2003: Lower Granite Transport Evaluation, spring chinook and steelhead - finish

545 **Lower Monumental Survival/Efficiency Study (CORPS)**

2004: Report of 2003 study

2005: Report of 2003 study

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

3.1 Operations of FCRPS fish facilities

337 **Non-Routine Maintenance of John Day Lock and Dam Fish Passage Facilities (CORPS)**

2003: Rebuild powerhouse AWS fish water pumps.

2004: Rebuild powerhouse AWS fish water pumps.

2005: Rebuild powerhouse AWS fish water pumps.

2006: Rehabilitate 1/3 of STS and VBS

2007: Rehabilitate 1/3 of STS and VBS

1. Status Monitoring

1.c Hydro Corridor Monitoring

146 **Installation of Adult PIT-tag Detection Systems (BPA)**

2003: 1) Install adult PIT detection systems in all ladders at John Day, Little Goose, and Lower Monumental. 2) Design adult PIT detection systems at counting windows at Bonneville and McNary if determined to be necessary. 3) Cost-share the adult PIT detector installation at Priest Rapids and Chandler if determined to be necessary.

2004: 1) Install adult PIT detection systems at counting windows at Bonneville and McNary if determined to be necessary.

2005: 1) Improve adult PIT detection systems where necessary.

2006: Closeout project.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

2. Action Effectiveness Research

2.a Hydro Actions

146 **Installation of Adult PIT-tag Detection Systems (BPA)**

2003: 1) Install adult PIT detection systems in all ladders at John Day, Little Goose, and Lower Monumental. 2) Design adult PIT detection systems at counting windows at Bonneville and McNary if determined to be necessary. 3) Cost-share the adult PIT detector installation at Priest Rapids and Chandler if determined to be necessary.

2004: 1) Install adult PIT detection systems at counting windows at Bonneville and McNary if determined to be necessary.

2005: 1) Improve adult PIT detection systems where necessary.

2006: Closeout project.

149 **Avian Predation on Juvenile Salmonids (BPA)**

2003: 1. Survey of managed Caspian tern colonies in the Columbia River estuary and along the WA coast; 2. Food habits, energy requirements, and smolt consumption rates of Caspian terns nesting in the estuary; 3. Foraging distribution and range, and habitat use of Caspian terns in the estuary and along the WA coast; 4. Survey of double-crested cormorants and glauscous-winged/western gulls nesting colonies on the mainstem above John Day Dam; 5. Food habits, energy requirements, and smolt consumption rates of double-crested cormorants. Increased emphasis on inland colonies and development of management alternatives to reduce predation in these locales.

486 **Water Quality Plan (CORPS)**

2003: Implement components of WQP

2004: Review and direct component implementation of WQP

2005: Insure integration of NWPPC provincial review projects into WQP

2006: Review and modify components of WQP

2007: Review and adjust modifications to WQP

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

2. Manage Water to Enhance Juvenile & Adult Fish Survival

552 **Dworshak Dissolved Gas Abatement Study (CORPS)**

2003: draft report

2004: Final Report

553 **Temperature Modeling Plan Alternative Snake River Operations (CORPS)**

2003: Phase 1 - Plan Development - Final Report

2004: Phase 2 - Model Development - Progress Report

2005: Phase 2 - Model Development - Progress Report

2006: Phase 2 - Baseline/Alternative Analysis -Progress Report

2007: Phase 2 - Alternative Analysis Draft Final Report

1.4 Project configuration RME

370 **McNary Juvenile Survival (CORPS)**

2003: 1800

2004: 2000

2.1 Reservoir operations to enhance fish survival

313 **Albeni Falls Operation (CORPS)**

2003: 1. Fill Albeni Falls to within 0.5 foot of the flood control rule on April 10. 2. Refill Albeni Falls by June 30

2004: 1. Fill Albeni Falls to within 0.5 foot of the flood control rule on April 10. 2. Refill Albeni Falls by June 30

2005: 1. Fill Albeni Falls to within 0.5 foot of the flood control rule on April 10. 2. Refill Albeni Falls by June 30

2006: 1. Fill Albeni Falls to within 0.5 foot of the flood control rule on April 10. 2. Refill Albeni Falls by June 30

2007: 1. Fill Albeni Falls to within 0.5 foot of the flood control rule on April 10. 2. Refill Albeni Falls by June 30

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

2. Manage Water to Enhance Juvenile & Adult Fish Survival

318 **Chum Flows Below Bonneville Dam (CORPS)**

2003: Provide Chum flows below Bonneville Dam

2004: Provide Chum flows below Bonneville Dam

2005: Provide Chum flows below Bonneville Dam

2006: Provide Chum flows below Bonneville Dam

2007: Provide Chum flows below Bonneville Dam

324 **Dworshak Operations (CORPS)**

2003: 1. Fill Dworshak to within 0.5 foot of the flood control rule on April 10. 2. Refill Dworshak by June 30. 3. Release water from Dworshak to attempt to maintain water temperatures at the Lower Granite forebay at or below 68 F. 4. Draft Limit at Dworshak observed. 5. Limit Dworshak outflow to minimum flow after summer operations.

2004: 1. Fill Dworshak to within 0.5 foot of the flood control rule on April 10. 2. Refill Dworshak by June 30. 3. Release water from Dworshak to attempt to maintain water temperatures at the Lower Granite forebay at or below 68 F. 4. Draft Limit at Dworshak observed. 5. Limit Dworshak outflow to minimum flow after summer operations.

2005: 1. Fill Dworshak to within 0.5 foot of the flood control rule on April 10. 2. Refill Dworshak by June 30. 3. Release water from Dworshak to attempt to maintain water temperatures at the Lower Granite forebay at or below 68 F. 4. Draft Limit at Dworshak observed. 5. Limit Dworshak outflow to minimum flow after summer operations.

2006: 1. Fill Dworshak to within 0.5 foot of the flood control rule on April 10. 2. Refill Dworshak by June 30. 3. Release water from Dworshak to attempt to maintain water temperatures at the Lower Granite forebay at or below 68 F. 4. Draft Limit at Dworshak observed. 5. Limit Dworshak outflow to minimum flow after summer operations.

2007: 1. Fill Dworshak to within 0.5 foot of the flood control rule on April 10. 2. Refill Dworshak by June 30. 3. Release water from Dworshak to attempt to maintain water temperatures at the Lower Granite forebay at or below 68 F. 4. Draft Limit at Dworshak observed. 5. Limit Dworshak outflow to minimum flow after summer operations.

339 **John Day Minimum Pool Operation (CORPS)**

2003: Operate John Day pool at minimum level that allows irrigation for dates specified.

2004: Operate John Day pool at minimum level that allows irrigation for dates specified.

2005: Operate John Day pool at minimum level that allows irrigation for dates specified.

2006: Operate John Day pool at minimum level that allows irrigation for dates specified.

2007: Operate John Day pool at minimum level that allows irrigation for dates specified.

341 **Libby Operations Andromous (CORPS)**

2003: 1. Fill Libby to within 0.5 foot of the flood control rule by April 10. 2. Refill Libby by June 30. 3. Observed Draft Limit at Libby

2004: 1. Fill Libby to within 0.5 foot of the flood control rule by April 10. 2. Refill Libby by June 30. 3. Observed Draft Limit at Libby

2005: 1. Fill Libby to within 0.5 foot of the flood control rule by April 10. 2. Refill Libby by June 30. 3. Observed Draft Limit at Libby

2006: 1. Fill Libby to within 0.5 foot of the flood control rule by April 10. 2. Refill Libby by June 30. 3. Observed Draft Limit at Libby

2007: 1. Fill Libby to within 0.5 foot of the flood control rule by April 10. 2. Refill Libby by June 30. 3. Observed Draft Limit at Libby

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

2. Manage Water to Enhance Juvenile & Adult Fish Survival

361 **Lower Snake projects Minimum Operating Pool operation (CORPS)**

2003: Operate Lower Snake projects at MOP during fish season

2004: Operate Lower Snake projects at MOP during fish season

2005: Operate Lower Snake projects at MOP during fish season

2006: Operate Lower Snake projects at MOP during fish season

2007: Operate Lower Snake projects at MOP during fish season

373 **Operate Turbine units at 1% efficiency range (CORPS)**

2003: Operate Turbine units at 1% efficiency range during time specified

2004: Operate Turbine units at 1% efficiency range during time specified

2005: Operate Turbine units at 1% efficiency range during time specified

2006: Operate Turbine units at 1% efficiency range during time specified

2007: Operate Turbine units at 1% efficiency range during time specified

377 **Shift Flood Control to Maximize Snake River Water Storage (CORPS)**

2003: Consider shifting flood control requirements from Brownlee and Dworshak to Grand Coulee

2004: Consider shifting flood control requirements from Brownlee and Dworshak to Grand Coulee

2005: Consider shifting flood control requirements from Brownlee and Dworshak to Grand Coulee

2006: Consider shifting flood control requirements from Brownlee and Dworshak to Grand Coulee

2007: Consider shifting flood control requirements from Brownlee and Dworshak to Grand Coulee

486 **Water Quality Plan (CORPS)**

2003: Implement components of WQP

2004: Review and direct component implementation of WQP

2005: Insure integration of NWPPC provincial review projects into WQP

2006: Review and modify components of WQP

2007: Review and adjust modifications to WQP

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

2. Manage Water to Enhance Juvenile & Adult Fish Survival

548 **Revise Storage Diagrams for Libby (CORPS)**

2003: Prepare forecast procedure for January through June using SOI parameter.

2004: Explore use of new forecast procudre to devlope alternate storage reservation diagram at Libby

2.2 System flow mgmt to enhance fish survival

323 **Modify Dworshak National Fish Hatchery System 1 Reuse System (CORPS)**

2003: Finish construction of Phase 1 and Phase 2 modifications to hatchery.

329 **Flow Objectives at McNary (CORPS)**

2003: 1. Attempt to meet the spring flow objective at McNary. 2. Attempt to meet the summer flow objective at McNary.

2004: 1. Attempt to meet the spring flow objective at McNary. 2. Attempt to meet the summer flow objective at McNary.

2005: 1. Attempt to meet the spring flow objective at McNary. 2. Attempt to meet the summer flow objective at McNary.

2006: 1. Attempt to meet the spring flow objective at McNary. 2. Attempt to meet the summer flow objective at McNary.

2007: 1. Attempt to meet the spring flow objective at McNary. 2. Attempt to meet the summer flow objective at McNary.

330 **Flow Objectives at Lower Granite (CORPS)**

2003: 1. Attempt to meet the spring flow objective at Lower Granite. 2. Attempt to meet the summer flow objective at Lower Granite.

2004: 1. Attempt to meet the spring flow objective at Lower Granite. 2. Attempt to meet the summer flow objective at Lower Granite..

2005: 1. Attempt to meet the spring flow objective at Lower Granite. 2. Attempt to meet the summer flow objective at Lower Granite

2006: 1. Attempt to meet the spring flow objective at Lower Granite. 2. Attempt to meet the summer flow objective at Lower Granite.

2007: 1. Attempt to meet the spring flow objective at Lower Granite. 2. Attempt to meet the summer flow objective at Lower Granite.

374 **Priest Rapids Flow Objective (CORPS)**

2003: Attempt to meet the spring flow objective at Priest Rapids

2004: Attempt to meet the spring flow objective at Priest Rapids

2005: Attempt to meet the spring flow objective at Priest Rapids

2006: Attempt to meet the spring flow objective at Priest Rapids

2007: Attempt to meet the spring flow objective at Priest Rapids

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

2. Manage Water to Enhance Juvenile & Adult Fish Survival

551 **Review of Forebay Monitors Lower Granite to McNary (CORPS)**

2003: Begin field investigations and analysis, Identify recommended relocations

2004: Continue field investigations and analysis,Prepare memorandum and coordinate with agencies

2005: Implement field relocations

2006: Continue remaining relocations

2.3 Spill operations for project passage

148 **Gas Bubble Disease Research and Monitoring of Juvenile Salmonids (BPA)**

2003: TBD

370 **McNary Juvenile Survival (CORPS)**

2003: 1800

2004: 2000

557 **Spill for Juvenile Fish Passage (CORPS)**

2003: 1. Provide Spill for juvenile fish passage as specified 2. Don't spill at Lower Snake Projects if flow projected to be below 85 kcfs.

2004: 1. Provide Spill for juvenile fish passage as specified 2. Don't spill at Lower Snake Projects if flow projected to be below 85 kcfs.

2005: 1. Provide Spill for juvenile fish passage as specified 2. Don't spill at Lower Snake Projects if flow projected to be below 85 kcfs.

2006: 1. Provide Spill for juvenile fish passage as specified 2. Don't spill at Lower Snake Projects if flow projected to be below 85 kcfs.

2007: 1. Provide Spill for juvenile fish passage as specified 2. Don't spill at Lower Snake Projects if flow projected to be below 85 kcfs.

2.4 Transmission reinforcement in support of spill

300 **Grand Coulee Bell 500-kV Transmission Line (BPA)**

2003: Complete Final EIS/Record of Decision

2004: Complete Construction

301 **Hungry Horse Transmission Stability Study (BPA)**

2003: Conduct System Engineering Studies

2004: Submit Feasibilty Report & Recommendations to USFWS

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

2. Manage Water to Enhance Juvenile & Adult Fish Survival

302 **Libby Transmission Stability Study (BPA)**

2003: Conduct System Engineering Studies

2004: Submit Feasibility Report and Recommendations to USFWS

304 **Schultz-Wautoma 500-kV Transmission Line (BPA)**

2003: Complete Final EIS/Record of Decision

2004: Complete Construction

2005: Complete Environmental Mitigation

2.5 Other actions to enhance water management

319 **Coordinate Water Management Decisions with TMT (CORPS)**

2003: Coordinate Water Management decisions with TMT

2004: Coordinate Water Management decisions with TMT

2005: Coordinate Water Management decisions with TMT

2006: Coordinate Water Management decisions with TMT

2007: Coordinate Water Management decisions with TMT

382 **Water Management Plan (CORPS)**

2003: 1. Prepare Water Management Plan. 2. Coordinate Water Management Plan with TMT.

2004: 1. Prepare Water Management Plan. 2. Coordinate Water Management Plan with TMT.

2005: 1. Prepare Water Management Plan. 2. Coordinate Water Management Plan with TMT.

2006: 1. Prepare Water Management Plan. 2. Coordinate Water Management Plan with TMT.

2007: 1. Prepare Water Management Plan. 2. Coordinate Water Management Plan with TMT.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

2. Manage Water to Enhance Juvenile & Adult Fish Survival

440 **Pursue water conservation at USBR projects (USBR)**

2003: Schedule and implement projects

2004: Schedule and implement projects

2005: Schedule and implement projects

2006: Schedule and implement projects

2007: Schedule and implement projects

441 **Investigate Unauthorized Use of USBR Water (USBR)**

2003: Resolve use issues on a case-by-case basis.

2004: Resolve use issues on a case-by-case basis.

2005: Resolve use issues on a case-by-case basis.

2006: Resolve use issues on a case-by-case basis.

2007: Resolve use issues on a case-by-case basis.

444 **Okanogan Project ESA Consultation with NMFS (USBR)**

2003: Submit BA to NMFS and FWS. Receive draft BiOps.

2004: Receive final BiOps. Complete Record of Decision

448 **Banks Lake Drawdown Study (USBR)**

2003: Complete Final EIS, Issue ROD

449 **Water Acquisition from Reclamation's Snake River Projects (USBR)**

2003: Provide up to 427 kaf for flow augmentation.

2004: Provide up to 427 kaf for flow augmentation.

2005: Provide up to 427 kaf for flow augmentation.

2006: Provide up to 427 kaf for flow augmentation.

2007: Provide up to 427 kaf for flow augmentation.

450 **Columbia Basin Project Wasteway and Drain Investigation (USBR)**

2003: Issue final report

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

2. Manage Water to Enhance Juvenile & Adult Fish Survival

451 **Return Flow Quality from Columbia Basin Project (USBR)**

2003: Monitor return flows

2004: Monitor return flows

2005: Monitor return flows

2006: Monitor return flows

2007: Develop remediation plan, if needed

499 **Report on use of Additional Canadian Storage To support mainstream flow objectives (BPA)**

2003: Complete feasibility report, request & negotiate shaping/storage

2004: Complete feasibility report, request & negotiate shaping/storage

2005: Complete feasibility report, request & negotiate shaping/storage

2006: Complete feasibility report, request & negotiate shaping/storage

2007: Complete feasibility report, request & negotiate shaping/storage

500 **Canadian Treaty Storage Agreement - Request/Negotiate Additional Storage (BPA)**

2003: Request/Negotiate Additonal Storage

2004: Request/Negotiate Additonal Storage

2005: Request/Negotiate Additonal Storage

2006: Request/Negotiate Additonal Storage

2007: Request/Negotiate Additonal Storage

501 **Non-Treaty Storage Agreement with Canada-Request Additional Storage (BPA)**

2003: Requst/Negotiate Non-Treaty Storage

2004: Requst/Negotiate Non-Treaty Storage

2005: Requst/Negotiate Non-Treaty Storage

2006: Requst/Negotiate Non-Treaty Storage

2007: Requst/Negotiate Non-Treaty Storage

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

2. Manage Water to Enhance Juvenile & Adult Fish Survival

540 **Evaluate Flood Control Operations to Reduce River Ecosystem Effects (CORPS)**

2003: Flood Control Study proceeding

2004: Flood Control Study proceeding

2005: Flood Control Study proceeding

2006: Flood Control Study proceeding

2007: Flood Control Study proceeding

546 **Request/Negotiate 1 MAF of Treaty storage with BC Hydro (CORPS)**

2003: 1 MAF of Treaty storage has been requested and negotiated with BC Hydro

2004: 1 MAF of Treaty storage has been requested and negotiated with BC Hydro

2005: 1 MAF of Treaty storage has been requested and negotiated with BC Hydro

2006: 1 MAF of Treaty storage has been requested and negotiated with BC Hydro

2007: 1 MAF of Treaty storage has been requested and negotiated with BC Hydro

547 **Up to 3.5 MAF flow augmentation from Candian storagein July and Auugst (CORPS)**

2003: BC Hydro will evaluate future study subject to BC Water Use Planning Process

2004: BC Hydro will evaluate future study subject to BC Water Use Planning Process

2005: BC Hydro will evaluate future study subject to BC Water Use Planning Process

2006: BC Hydro will evaluate future study subject to BC Water Use Planning Process

2007: BC Hydro will evaluate future study subject to BC Water Use Planning Process

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Critical Uncertainty Research

3.a Hydro Research

146 **Installation of Adult PIT-tag Detection Systems (BPA)**

2003: 1) Install adult PIT detection systems in all ladders at John Day, Little Goose, and Lower Monumental. 2) Design adult PIT detection systems at counting windows at Bonneville and McNary if determined to be necessary. 3) Cost-share the adult PIT detector installation at Priest Rapids and Chandler if determined to be necessary.

2004: 1) Install adult PIT detection systems at counting windows at Bonneville and McNary if determined to be necessary.

2005: 1) Improve adult PIT detection systems where necessary.

2006: Closeout project.

321 **Delayed Mortality of Juveniles (CORPS)**

2005: Final Report

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

1.1 Mainstem juvenile passage enhancement

532 **Operation and Maintenance of Bonneville Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

1.2 Mainstem adult passage enhancement

532 **Operation and Maintenance of Bonneville Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

3.1 Operations of FCRPS fish facilities

314 **Adult Fish Counting at Mainstem Columbia and Snake River Projects (CORPS)**

2003: Implement annual fish counting program.

2004: Implement annual fish counting program.

2005: Implement annual fish counting program.

2006: Implement annual fish counting program.

2007: Implement annual fish counting program.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

315 **Avian Predation Measures at Mainstem Columbia and Snake River Projects (CORPS)**

2003: Implement measures in FPP, and contract with USDA to discourage avian predation at projects. Non-routine - remove net-frames from the tailraces of the Bonneville powerhouses.

2004: Implement measures in FPP, and contract with USDA to discourage avian predation at projects.

2005: Implement measures in FPP, and contract with USDA to discourage avian predation at projects.

2006: Implement measures in FPP, and contract with USDA to discourage avian predation at projects.

2007: Implement measures in FPP, and contract with USDA to discourage avian predation at projects.

317 **Operation and Maintenance of Bonneville Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

328 **Fish Passage Plan Development and Implementation (CORPS)**

2003: Annual update and implemention of Fish Passage Plan.

2004: Annual update and implemention of Fish Passage Plan.

2005: Annual update and implemention of Fish Passage Plan.

2006: Annual update and implemention of Fish Passage Plan.

2007: Annual update and implemention of Fish Passage Plan.

334 **Operation and Maintenance of Ice Harbor Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

338 **Operation and Maintenance of John Day Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

346 **Operation and Maintenance of Little Goose Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

353 **Operation and Maintenance of Lower Granite Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

360 **Operation and Maintenance of Lower Monumental Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

369 **Operation and Maintenance of McNary Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

371 **Monitoring of Bull Trout at Mainstem Projects (CORPS)**

2003: Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities. Extend adult fish counting at Lower Monumental and Little Goose dams to include year round counting of bull trout.

2004: Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities. Extend adult fish counting at Lower Monumental and Little Goose dams to include year round counting of bull trout.

2005: Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities.

2006: Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities.

2007: Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities.

373 **Operate Turbine units at 1% efficiency range (CORPS)**

2003: Operate Turbine units at 1% efficiency range during time specified

2004: Operate Turbine units at 1% efficiency range during time specified

2005: Operate Turbine units at 1% efficiency range during time specified

2006: Operate Turbine units at 1% efficiency range during time specified

2007: Operate Turbine units at 1% efficiency range during time specified

380 **Operation and Maintenance of The Dalles Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

381 **Improve Operations of Adult Fishway Main Entrances (CORPS)**

2003: Implement fishway operational improvements and modifications as required. Continue updating Portland Distict hydraulic models with preparation of a report with recommendations for physical and operational improvements.

2004: Implement fishway operational improvements and modifications as required.

2005: Implement fishway operational improvements and modifications as required.

2006: Implement fishway operational improvements and modifications as required.

2007: Implement fishway operational improvements and modifications as required.

3.2 Routine maintenance on fish/wildlife facility

243 **Fish Passage Center (BPA)**

2003: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2004: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2005: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2006: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2007: 1) Provide design, oversight, and data analysis of information collected through the conduct of the annual Smolt Monitoring Program (SMP). 2) Perform Section 10 ESA permit application and reporting requirements for SMP and CSS studies. 2) Perform daily operation and maintenance of FPC web site and long term data base of annual fish migration and river environment information for distribution of data region wide. 3) Perform data analysis and prepare Annual Status Report for Comparative Survival Study (CSS) as directed by the CSS Oversight Committee of the fisheries management agencies and tribes. 4) Prepare FPC Annual Report summarizing fish migration, fish passage operations, and river environment information collected through the SMP.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

317 **Operation and Maintenance of Bonneville Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

334 **Operation and Maintenance of Ice Harbor Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

338 **Operation and Maintenance of John Day Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

346 **Operation and Maintenance of Little Goose Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

353 **Operation and Maintenance of Lower Granite Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

360 **Operation and Maintenance of Lower Monumental Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

369 **Operation and Maintenance of McNary Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

371 **Monitoring of Bull Trout at Mainstem Projects (CORPS)**

2003: Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities. Extend adult fish counting at Lower Monumental and Little Goose dams to include year round counting of bull trout.

2004: Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities. Extend adult fish counting at Lower Monumental and Little Goose dams to include year round counting of bull trout.

2005: Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities.

2006: Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities.

2007: Count bull trout as part of the adult fish counting program at the four lower Columbia River and four lower SnakeRiver projects. Record the presence of bull trout at all mainstem project smolt monitoring facilities.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

378 **Spare Parts for Fish Passage Facilities (CORPS)**

2003: Procure spare parts as required. Contractor deliver spare winding for McNary Dam adult fish pumps.

2004: Procure spare parts as required.

2005: Procure spare parts as required.

2006: Procure spare parts as required.

2007: Procure spare parts as required.

380 **Operation and Maintenance of The Dalles Lock and Dam Fish Passage Facilities (CORPS)**

2003: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2004: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2005: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2006: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

2007: Routine operation of fish passage facilities. Routine maintenance of fish passage facilities.

3.3 Non-routine maintenance-fish & wildlife facility

316 **Non-Routine Maintenance of Bonneville Lock and Dam Fish Passage Facilities (CORPS)**

2003: Rehabilitation of the Bradford Island and Cascades Island aging fishways. Use the new mechanized STS/VBS inspection system for timely inspections. Refurbish aging STS in the Bonneville second powerhouse. Preventative Maintenance Program.

2004: Rehabilitation of the Bradford Island and Cascades Island aging fishways. Use the new mechanized STS/VBS inspection system for timely inspections. Refurbish aging STS in the Bonneville second powerhouse. Preventative Maintenance Program.

2005: Rehabilitation of the Bradford Island and Cascades Island aging fishways. Use the new mechanized STS/VBS inspection system for timely inspections. Refurbish aging STS in the Bonneville second powerhouse. Design corrections for repair of second powerhouse adult fish ladder north monolith. Dredge second powerhouse forebay upstream of the AWS fish water units intakes.

2006: Use the new mechanized STS/VBS inspection system for timely inspections. Refurbish aging STS in the Bonneville second powerhouse. Repair second powerhouse fish ladder north monolith.

2007: Use the new mechanized STS/VBS inspection system for timely inspections. Refurbish aging STS in the Bonneville second powerhouse. Complete repair of second powerhouse fish ladder north monolith.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

322 **Automated Alarm System for Adult Collection Channel Diffuser Systems (CORPS)**

2003: Contract and install prototype monitoring and alarm system if determined feasible. Continue inspection of diffuser gratings as routine adult fishway maintenance. Correct any diffuser grating problems when found.

2004: Implement monitoring and alarm system at additonal projects as required. Continue inspection of diffuser gratings as routine adult fishway maintenance. Correct any diffuser grating problems when found.

2005: Implement monitoring and alarm system at additonal projects as required. Continue inspection of diffuser gratings as routine adult fishway maintenance. Correct any diffuser grating problems when found.

2006: Implement monitoring and alarm system at additonal projects as required. Continue inspection of diffuser gratings as routine adult fishway maintenance. Correct any diffuser grating problems when found.

2007: Implement monitoring and alarm system at additonal projects as required. Continue inspection of diffuser gratings as routine adult fishway maintenance. Correct any diffuser grating problems when found.

333 **Non-Routine Maintenance of Ice Harbor Lock and Dam Fish Passage Facilities (CORPS)**

2003: Contractor replace south shore fish pump hydraulic systems. Award contract for fabrication of new fish pump dewatering bulkheads. Award contract for replacement of adult collection system entrance hoists. Prepare contract to replace powerhouse adult collection channel dewatering valves.

2004: Award 4 year contracts for rehabbing south shore adult fish pumps, rehabbing 2 pumps per year. Contractor to replace north shore fish pump hydraulic system. Contract for replacement of powerhouse adult collection channel drain valves during winter maintenance period. Project personnel replace powerhouse collection channel diffuser gratings. Prepare contract to rehab powerhouse collection channel diffuser valves.

2005: Continue contracts to rehab south shore fish pumps, 2 pumps per year. Contract to rehab powerhouse adult collection channel diffuser valves.

2006: Continue contracts to rehab south shore fish pumps, 2 pmps per year. Prepare contract for installing new adult collection channel control system.

2007: Continue contracts to rehab south shore fish pumps, 2 pumps per year. Contract for installation of new adult collection channel control system.

345 **Non-Routine Maintenance of Little Goose Lock and Dam Fish Passage Facilities (CORPS)**

2003: Prepare contract plans and specifications for painting juvenile fish facility dewatering structure.

2004: Contract for painting juvenile fish facility dewatering structure. Prepare contract plans and specifications for installing new water and sewer lines to juvenile fish facilities.

2005: Award contract and install new water and sewer lines to juvenile fish facilities.

2006: Prepare contract plans and specifications for overhauling ESBs's.

2007: Award 2 year contract to overhaul ESBS, with 1/2 being overhauled in FY 2007.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

352 **Non-Routine Maintenance of Lower Granite Lock and Dam Fish Passage Facilities (CORPS)**

2003: Finish preparing contract and contract to paint the interior holds of 2 8000-series fish barges.

2004: Contract painting interior holds of 2 8000-seiresfish barges.

2005: Prepare contract for overhauling ESBS's. Prepare contract for constructing 2 new 4000-series fish barges.

2006: Award contract to overhaul ESBS's, with 1/2 being overhauled in FY 2007. Award contract and begin construction of 2 new 4000-series fish barges.

2007: Continuing contract, overhaul second half of ESBS's. Finish construction of 2new 4000- series fish barges.

359 **Non-Routine Maintenance of Lower Monumental Lock and Dam Fish Passage Facilities (CORPS)**

2003: Continue contract for rehabbing adult fishpumps - rehab one fish pump. Prepare contract to install fish ladder handrails.

2004: Continue contract for rehabbing adult fish pumps - rehab one fish pump. Contract for installation for adult fish ladder handrails.

2005: Prepare contract for new adult collection channel control system.

2006: Contract installation of new adult collection channel control system.

368 **Non-Routine Maintenance of McNary Lock and Dam Fish Passage Facilities (CORPS)**

2003: Contract and install new fish ladder tilting weir controls. Prepare contract for replacing mesh on VBS's.

2004: Prepare contract to replace south fish ladder rotovalves.

2005: Contract to replace mesh on one-half of the VBS's. Contract to replace south shore fish ladder rotovalves. Prepare contract to overhaul ESBS's. Prepare contract for rehabbing fish ladder tilting weirs.

2006: Continue contract to replace mesh on 2nd half of VBS's. Contract to rehab south fish ladder tilting weirs. Contract to overhaul 1/3 of ESBS's. Contract to rehab north fish ladder tilting weirs. Prepare contract for rehabbing adult fishway entrances.

2007: Continue contract to overhaul 1/3 of ESBS's. Contract to rehab north fish ladder tilting weirs. Contract to overhaul north shore fishway entrance. Prepare contract for rehabbing adult fish pumps.

375 **Remove Obstructions from Turbine Environments (CORPS)**

2003: Inspect turbine units areas during annual maintenance activitiees. Romove obstrucitons when found and make necessary modifications for maintenance activities.

2004: Inspect turbine units areas during annual maintenance activitiees. Romove obstrucitons when found and make necessary modifications for maintenance activities.

2005: Inspect turbine units areas during annual maintenance activitiees. Romove obstrucitons when found and make necessary modifications for maintenance activities.

2006: Inspect turbine units areas during annual maintenance activitiees. Romove obstrucitons when found and make necessary modifications for maintenance activities.

2007: Inspect turbine units areas during annual maintenance activitiees. Romove obstrucitons when found and make necessary modifications for maintenance activities.

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

379 **Non-Routine Maintenance of The Dalles Lock and Dam Fish Passage Facilities (CORPS)**

2003: Begin installation of new lifting cable and extensions for the main entrance gates.

2005: Contract for new window cleaning brushes for the fish count stations windows. Prepare designs for rehabilitating the north shore fish ladder. Procure new main fish ladder entrance gates. Prepare designs for new weir guides.

2006: Install new window cleaning brushes on the fish count stations windows. Contract for rehabilitation of the north shore fish ladder. Install new main fish ladder entrance gates. Install new weir guides.

2007: Finish contract for the rehabilitation of the north shore fish ladder.

3.4 Juvenile fish transport actions/enhance fish

340 **Corps of Engineers' Juvenile Fish TransportationProgram (CORPS)**

2003: Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

2004: Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

2005: Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

2006: Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

2007: Implement juvenile fish tranpsortation program in accordance with operating criteria and regional coordination.

544 **Juvenile salmon transportation evaluations (CORPS)**

2003: Lower Granite Transport Evaluation, spring chinook and steelhead - finish

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

3.5 Operations RME

237 **Columbia River Basin PIT Tag Information System (BPA)**

2003: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2004: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2005: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2006: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

2007: 1.0 Operate and maintain the centralized Columbia River Basin-wide database for PIT-tagged Fish (at Gladstone, OR). 2.0 Install, operate and maintain permanent interrogation systems and provide the interrogation data to PTAGIS in near-real time (at Kennewick, WA). 3.0 Provide coordination and support for research projects that depend upon selective segregation of fish by code (SxC) at Columbia Basin fish collection facilities. 4.0 Provide training, system information, coordination, consultation and support for all Columbia Basin PIT tag research projects through the development of user manuals, newsletters, workshops, videos, etc. 5.0 Manage the purchase and distribution of PIT tags and PIT tag detection equipment for all NWPPC FWP projects. 6.0 Provide additional support actions related to PIT tag data recovery, System-wide Planning and Coordination and Public Outreach. 7.0 Project Administration and Management.

321 **Delayed Mortality of Juveniles (CORPS)**

2005: Final Report

370 **McNary Juvenile Survival (CORPS)**

2003: 1800

2004: 2000

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

381 **Improve Operations of Adult Fishway Main Entrances (CORPS)**

2003: Implement fishway operational improvements and modifications as required. Continue updating Portland Distict hydraulic models with preparation of a report with recommendations for physical and operational improvements.

2004: Implement fishway operational improvements and modifications as required.

2005: Implement fishway operational improvements and modifications as required.

2006: Implement fishway operational improvements and modifications as required.

2007: Implement fishway operational improvements and modifications as required.

RM&E

145 **New Marking and Monitoring Techniques (BPA)**

2003: 1) Continue development of small-stream PIT detection with capability of remote location. 2) Initiate development of a high-flow and high-Q PIT detection system for the Bonneville Corner Collector. 3) Initiate development of a next generation PIT detection transceiver with numerous additional capabilities.

2004: 1) Continue development of small-stream PIT detection with capability of remote location. 2) Continue development of a high-flow and high-Q PIT detection system for the Bonneville Corner Collector and other applications. 3) Continue development of a next generation PIT detection transceiver with numerous additional capabilities.

2005: 1) Continue development of small-stream PIT detection with capability of remote location. 2) Continue development of a high-flow and high-Q PIT detection system for various applications. 3) Complete development of a next generation PIT detection transceiver with numerous additional capabilities.

2006: 1) Complete development of a small-stream PIT detection system with capability of deployment in remote locations. 2) Continue development of various PIT detection systems as needed.

2007: 1) Continue development of various PIT detection systems as needed.

147 **Using Induced Turbulence to Assist Juvenile Migrating Salmon (BPA)**

2003: end of project

2003-2007 Project Deliverables by Strategy and Substrategy

Hydro

Water Management

Other Actions

439 **Reclamation Water Contracts (USBR)**

2003: None

2004: Consult on Lucky Peak contract renewals

2005: None

2006: None

2007: None

2003-2007 Project Deliverables by Strategy and Substrategy

Resident Fish

Determine the Impacts of the FCRPS on Bull Trout and Mitigate for those Impacts

2.1 Determine the extent to which bull trout use affected by FCRPS dams and resevoirs

143 **Evaluate Bull Trout Movements in the Tucannon and Lower Snake Rivers (BPA)**

2003: 1) Radio tags implanted in 20-40 bull trout captured at or downstream of the Tucannon Hatchery weir, April-July. 2) Migration histories of radio-tagged bull trout in and among the Lower Monumental, adjacent reservoirs of the lower Snake R., and the Tucannon R. 3) Estimates of fallback/entrainment of radio-tagged bull trout at Little Goose and Lower Monumental dams. 4) Estimates of losses of bull trout due to movement out of Lower Granite pool.

2004: 1) Radio tags implanted in 20-40 bull trout captured at or downstream of the Tucannon Hatchery weir, April-July. 2) Migration histories of radio-tagged bull trout in and among the Lower Monumental, adjacent reservoirs of the lower Snake R., and the Tucannon R. 3) Estimates of fallback/entrainment of radio-tagged bull trout at Little Goose and Lower Monumental dams. 4) Estimates of losses of bull trout due to movement out of Lower Granite pool.

2005: 1) Migration histories of radio-tagged bull trout in and among the Lower Monumental, adjacent reservoirs of the lower Snake R., and the Tucannon R. 2) Estimates of fallback/entrainment of radio-tagged bull trout at Little Goose and Lower Monumental dams. 3) Estimates of losses of bull trout due to movement out of Lower Granite pool.

464 **Seek USFWS concurrence on water storage (CORPS)**

2003: Concurrance has Occured

2004: Concurrance has Occured

2005: Concurrance has Occured

2006: Concurrance has Occured

2007: Concurrance has Occured

488 **Dworshak Integrated Rule Curves/M&E (BPA)**

2006: Refine the Dworshak Rule Curve Evaluation Model (DRCEM) based on recommendations from Barber and Juul (2001). Identify and update appropriate integrated Dworshak operations (Integrated Rule Curve). Institute appropriate integrated operations.

491 **Lake Pend Oreille Fishery Recovery Project (BPA)**

2003: Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%. Have no net change in the amount of shoreline spawning gravel due to erosion or siltation during this experiment (maintain 1.7 million sq. feet). Increase the warm water fish population in the Pend Oreille River seven fold. Monitor baseline limnological factors which influence the lake's fish populations. Improve hatchery stocking program so that it contributes 375,000 kokanee to the harvest.

2004: Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%. Have no net change in the amount of shoreline spawning gravel due to erosion or siltation during this experiment (maintain 1.7 million sq. feet). Monitor baseline limnological factors which influence the lake's fish populations. Improve hatchery stocking program so that it contributes 375,000 kokanee to the harvest.

2005: Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%.

2006: Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%.

2003-2007 Project Deliverables by Strategy and Substrategy

Resident Fish

Determine the Impacts of the FCRPS on Bull Trout and Mitigate for those Impacts

496 **Lake Pend Oreille Predation Research (BPA)**

2003: Balance the pelagic predator and prey populations at a standing stock of less than 1 kg/ha predator to 6 kg/ha prey. Redefine the point of balance for predators and prey in Lake Pend Oreille where kokanee survival drops below 50% for any year class. Research and implement methods for the removal of rainbow trout that will not impact bull trout, until balance point is reached (currently thought to be 1:6). the competition between bull trout and other predatory fish. Kokanee survival rates over 50% would indicate forage is not in limited supply.

2004: Balance the pelagic predator and prey populations at a standing stock of less than 1 kg/ha predator to 6 kg/ha prey. Redefine the point of balance for predators and prey in Lake Pend Oreille where kokanee survival drops below 50% for any year class. Research and implement methods for the removal of rainbow trout that will not impact bull trout, until balance point is reached (currently thought to be 1:6). the competition between bull trout and other predatory fish. Kokanee survival rates over 50% would indicate forage is not in limited supply. Publish results of the study to keep other scientists aware of our progress.

2005: Monitoring?

2006: Monitoring?

2.2 Operate and modify FCRPS dams to protect, provide, and reconnect bull trout habitats

462 **Libby Operations Bull Trout (CORPS)**

2003: 1. Constrain Libby operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management. 2. Provide 6000 cfs minimum for bull trout during July and August if Koocanusa elevations are below salmon guidelines and salmon augmentation will not occur. Increased flows may be determined through TMT if additional water were available.

2004: 1. Constrain Libby operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management.□□2. Provide 6000 cfs minimum for bull trout during July and August if Koocanusa elevations are below salmon guidelines and salmon augmentation will not occur. Increased flows may be determined through TMT if additional water were available.

2005: 1. Constrain Libby operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management. 2. Provide 6000 cfs minimum for bull trout during July and August if Koocanusa elevations are below salmon guidelines and salmon augmentation will not occur. Increased flows may be determined through TMT if additional water were available.

2006: 1. Constrain Libby operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management. 2. Provide 6000 cfs minimum for bull trout during July and August if Koocanusa elevations are below salmon guidelines and salmon augmentation will not occur. Increased flows may be determined through TMT if additional water were available.

2007: 1. Constrain Libby operations to minimize adverse effects of flow fluctuations on bull trout, including year-round min. flows and ramping rates and seasonal water management. 2. Provide 6000 cfs minimum for bull trout during July and August if Koocanusa elevations are below salmon guidelines and salmon augmentation will not occur. Increased flows may be determined through TMT if additional water were available.

2003-2007 Project Deliverables by Strategy and Substrategy

Resident Fish

Determine the Impacts of the FCRPS on Bull Trout and Mitigate for those Impacts

491 **Lake Pend Oreille Fishery Recovery Project (BPA)**

2003: Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%. Have no net change in the amount of shoreline spawning gravel due to erosion or siltation during this experiment (maintain 1.7 million sq. feet). Increase the warm water fish population in the Pend Oreille River seven fold. Monitor baseline limnological factors which influence the lake's fish populations. Improve hatchery stocking program so that it contributes 375,000 kokanee to the harvest.

2004: Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%. Have no net change in the amount of shoreline spawning gravel due to erosion or siltation during this experiment (maintain 1.7 million sq. feet). Monitor baseline limnological factors which influence the lake's fish populations. Improve hatchery stocking program so that it contributes 375,000 kokanee to the harvest.

2005: Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%.

2006: Recover kokanee abundance so that a harvest of 750,000 fish can be maintained on an annual basis. This would require an adult kokanee population of 3.7 million fish and an egg-to-fry survival rate exceeding 3.6%.

2003-2007 Project Deliverables by Strategy and Substrategy

Resident Fish

Promote the Reproduction & Recruitment of Kootenai River White Sturgeon (KWS)

1.1 Conditions below Libby Dam that facilitate KWS natural reproduction and juvenile survival

463 **Libby Operations Sturgeon (CORPS)**

2003: 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or "tiered" approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin.□4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse□5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials.□6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange.□7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process.

2004: 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or "tiered" approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin.□4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse□5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials.□6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange.□7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process.

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2006: 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or "tiered" approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin.□4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse□5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials.□6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange.□7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process.

2007: 1. Store water and supply, at a minimum, flows in May through July based upon a water availability or "tiered" approach, per the final Sturgeon Recovery Plan. 2. Regulate flows from Libby, consistent with existing laws and orders, to maximize the probability of significant sturgeon recruitment. 3. During sturgeon recruitment flow periods, allow local inflow to supplement Libby Dam releases to the maximum extent feasible, while assuring public safety by monitoring water levels throughout relevant areas of the basin.□4. Keep Bonners Ferry Stage below 1764 during sturgeon pulse□5. Limit daily load-following in Libby outflow to not damage downstream levees. Provide public outreach materials.□6. Seek opportunities to reduce the second peak flow created by July/August salmon flow through Kootenay Lake, perhaps via a Libby-Arrow water exchange.□7. Fulfill USFWS annual operational guidelines prior to and during the sturgeon spawning/incubation period. Specific release recommendations will be developed in consultation with action agencies and submitted annually via the TMT or similar process.

2003-2007 Project Deliverables by Strategy and Substrategy

Resident Fish

Promote the Reproduction & Recruitment of Kootenai River White Sturgeon (KWS)

464 **Seek USFWS concurrence on water storage (CORPS)**

2003: Concurrance has Occured

2004: Concurrance has Occured

2005: Concurrance has Occured

2006: Concurrance has Occured

2007: Concurrance has Occured

471 **Reconnection of floodplain slough habitat to the Kootenai River (BPA)**

2003: 1. Design/construct a connection between the Kootenai River and an adjacent slough.

2004: Monitor project and report results

2005: Monitor project and report results

2006: Monitor project and report results

489 **Kootenai River White Sturgeon Study and Experimental Aquaculture (BPA)**

2003: Implement planning process for second facility to be used for: 1) additional rearing space for white sturgeon produced in the conservation aquaculture program and 2) restoration/preservation of declining native fish populations. Provide compensatory harvest opportunities for Tribal members while actions are implemented to benefit declining native fish stocks. Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.) Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

2004: Establish an experimental white sturgeon population outside the current occupied range. Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.) Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

2005: Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.) Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

2006: Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.) Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

2003-2007 Project Deliverables by Strategy and Substrategy

Resident Fish

Promote the Reproduction & Recruitment of Kootenai River White Sturgeon (KWS)

490 **Kootenai River Fisheries Recovery Investigations (BPA)**

2003: Test Null Hypothesis: survival of larval sturgeon released over sand substrate is higher than larvae released over cobble substrate. Determine how changes in Kootenay Lake elevation effects white sturgeon spawning location. Will cost share with USGS. Evaluate the use of artificial substrates and instream structures to improve white sturgeon egg and larval survival and relocate sturgeon spawning. Test null hypothesis that winter operation of Libby Dam does not effect burbot migration distance or travel rate. Measure test and control in travel time, km/day. Test null hypothesis that high winter flows do not cause stress in burbot and impair reproductive fitness. Test null hypothesis under laboratory conditions that various flows and temperatures do not cause stress in burbot and impair reproductive fitness. Estimate the number of burbot from Bonners Ferry, ID, to Kootenay Lake, BC. and provide estimate of recruitment and survival. Determine affective means of sampling larval burbot and white sturgeon. Determine the contribution of mainstem rainbow, Westslope cutthroat, and bull trout spawners to the Idaho reach of the Kootenai River downstream of the Montana border. Enhance spawning habitat in the mainstem Kootenai R. and/or tributaries and evaluate. Large scale sampling, within two refernence reaches, to determine the pre-fertilization and post-fertilization status of the fish community, trophic structure, densities, standing stocks, and the population dynamics of salmonids. M&E experimental flows for sturgeon spawning and rearing, determine the minimum flow that will provide spawning and rearing habitat for Kootenai River white sturgeon and bring off a successful year class. M&E implementation of a recovery strategy for burbot as prescribed in the Recovery Strategy for burbot.

2004: Test Null Hypothesis: survival of larval sturgeon released over sand substrate is higher than larvae released over cobble substrate. Evaluate the use of artificial substrates and instream structures to improve white sturgeon egg and larval survival and relocate sturgeon spawning. Test null hypothesis that winter operation of Libby Dam does not effect burbot migration distance or travel rate. Measure test and control in travel time, km/day. Test null hypothesis that high winter flows do not cause stress in burbot and impair reproductive fitness. Estimate the number of burbot from Bonners Ferry, ID, to Kootenay Lake, BC. and provide estimate of recruitment and survival. Determine affective means of sampling larval burbot and white sturgeon. Determine the contribution of mainstem rainbow, Westslope cutthroat, and bull trout spawners to the Idaho reach of the Kootenai River downstream of the Montana border. Enhance spawning habitat in the mainstem Kootenai R. and/or tributaries and evaluate. Large scale sampling, within two refernence reaches, to determine the pre-fertilization and post-fertilization status of the fish community, trophic structure, densities, standing stocks, and the population dynamics of salmonids. Evaluate the potential to reduce the temperature of Deep Creek to develop a resident trout fishery. M&E experimental flows for sturgeon spawning and rearing, determine the minimum flow that will provide spawning and rearing habitat for Kootenai River white sturgeon and bring off a successful year class. M&E implementation of a recovery strategy for burbot as prescribed in the Recovery Strategy for burbot.

2005: Evaluate the use of artificial substrates and instream structures to improve white sturgeon egg and larval survival and relocate sturgeon spawning. Test null hypothesis that winter operation of Libby Dam does not effect burbot migration distance or travel rate. Measure test and control in travel time, km/day. Estimate the number of burbot from Bonners Ferry, ID, to Kootenay Lake, BC. and provide estimate of recruitment and survival. Large scale sampling, within two refernence reaches, to determine the pre-fertilization and post-fertilization status of the fish community, trophic structure, densities, standing stocks, and the population dynamics of salmonids. Evaluate the potential to reduce the temperature of Deep Creek to develop a resident trout fishery. M&E experimental flows for sturgeon spawning and rearing, determine the minimum flow that will provide spawning and rearing habitat for Kootenai River white sturgeon and bring off a successful year class. M&E implementation of a recovery strategy for burbot as prescribed in the Recovery Strategy for burbot.

2006: Evaluate the use of artificial substrates and instream structures to improve white sturgeon egg and larval survival and relocate sturgeon spawning. Test null hypothesis that winter operation of Libby Dam does not effect burbot migration distance or travel rate. Measure test and control in travel time, km/day. Estimate the number of burbot from Bonners Ferry, ID, to Kootenay Lake, BC. and provide estimate of recruitment and survival. Large scale sampling, within two refernence reaches, to determine the pre-fertilization and post-fertilization status of the fish community, trophic structure, densities, standing stocks, and the population dynamics of salmonids. M&E experimental flows for sturgeon spawning and rearing, determine the minimum flow that will provide spawning and rearing habitat for Kootenai River white sturgeon and bring off a successful year class. M&E implementation of a recovery strategy for burbot as prescribed in the Recovery Strategy for burbot.

2003-2007 Project Deliverables by Strategy and Substrategy

Resident Fish

Promote the Reproduction & Recruitment of Kootenai River White Sturgeon (KWS)

492 **Improving the Kootenai River Ecosystem (BPA)**

2003: Initiate NEPA permitting process to accommodate Kootenai River ecosystem restoration research, monitoring and management activities. Initiation of a controlled, large-scale nutrient enhancement effort in the mainstem Kootenai River, downstream of Montana-Idaho border. Test the feasibility of a Kootenai River controlled nutrient addition experiment. Evaluate the productivity within the Kootenai River before and after a large-scale nutrient supplementation experiment if warranted by results of mesocosm experiments. Monitor key water quality parameters, with an emphasis on macro-nutrients.

2004: Initiate NEPA permitting process to accommodate Kootenai River ecosystem restoration research, monitoring and management activities. Initiation of a controlled, large-scale nutrient enhancement effort in the mainstem Kootenai River, downstream of Montana-Idaho border. Evaluate the productivity within the Kootenai River before and after a large-scale nutrient supplementation experiment if warranted by results of mesocosm experiments. Monitor key water quality parameters, with an emphasis on macro-nutrients.

2005: Initiation of a controlled, large-scale nutrient enhancement effort in the mainstem Kootenai River, downstream of Montana-Idaho border. Evaluate the productivity within the Kootenai River before and after a large-scale nutrient supplementation experiment if warranted by results of mesocosm experiments. Monitor key water quality parameters, with an emphasis on macro-nutrients.

2006: Initiation of a controlled, large-scale nutrient enhancement effort in the mainstem Kootenai River, downstream of Montana-Idaho border. Evaluate the productivity within the Kootenai River before and after a large-scale nutrient supplementation experiment if warranted by results of mesocosm experiments. Monitor key water quality parameters, with an emphasis on macro-nutrients.

494 **Assess Feasibility of Enhancing White Sturgeon Spawning Substrate Habitat, Kootenai R., Idaho (BPA)**

2003: Design, construction, implementation, monitoring and evaluation of in-stream structures which would potentially enhance habitat for white sturgeon spawningDevelop sediment-transport models, develop spawning habitat substrate improvement scenarios, and assess the feasibility of habitat enhancement.

2004: Design, construction, implementation, monitoring and evaluation of in-stream structures which would potentially enhance habitat for white sturgeon spawning

2005: Design, construction, implementation, monitoring and evaluation of in-stream structures which would potentially enhance habitat for white sturgeon spawning

2006: Design, construction, implementation, monitoring and evaluation of in-stream structures which would potentially enhance habitat for white sturgeon spawning

498 **Implement Floodplain Operational Loss Assessment, Protection, Mitigation and Rehabilitation on the Lower Kootenai River Watershed Ecosystem (BPA)**

2003: Review, analyze and select research projects that will best assess operational losses in the Lower Kootenai River Watershed and are regionally applicable .2)Assess historic (early 1900's) and current condition and status of floodplain vegetation types, slough, pocket water and associated watercourses within the Lower Kootenai River Watershed by 2003. 3) Produce hydrologic models for the floodplain and each natural analogue stream course by 2003. 4) Develop a framework for regional floodplain operational loss assessments by 2004, with the use of Lower Kootenai River floodplain operational assessment, EDT, and normative analogue comparisons during 2003. 5)Plan and establish a trust fund or other funding strategy for securing management rights, and operations and maintenance to mitigate priority floodplain habitat areas by 2005.

2004: Review, analyze and select research projects that will best assess operational losses in the Lower Kootenai River Watershed and are regionally applicable . 4) Develop a framework for regional floodplain operational loss assessments by 2004, with the use of Lower Kootenai River floodplain operational assessment, EDT, and normative analogue comparisons during 2003. 5)Plan and establish a trust fund or other funding strategy for securing management rights, and operations and maintenance to mitigate priority floodplain habitat areas by 2005.

2005: Review, analyze and select research projects that will best assess operational losses in the Lower Kootenai River Watershed and are regionally applicable . 5)Plan and establish a trust fund or other funding strategy for securing management rights, and operations and maintenance to mitigate priority floodplain habitat areas by 2005.

2006: Review, analyze and select research projects that will best assess operational losses in the Lower Kootenai River Watershed and are regionally applicable . 5)Plan and establish a trust fund or other funding strategy for securing management rights, and operations and maintenance to mitigate priority floodplain habitat areas by 2005.

2003-2007 Project Deliverables by Strategy and Substrategy

Resident Fish

Promote the Reproduction & Recruitment of Kootenai River White Sturgeon (KWS)

1.2 Kootenai River white sturgeon conservation hatchery program

489 **Kootenai River White Sturgeon Study and Experimental Aquaculture (BPA)**

2003: Implement planning process for second facility to be used for: 1) additional rearing space for white sturgeon produced in the conservation aquaculture program and 2) restoration/preservation of declining native fish populations. Provide compensatory harvest opportunities for Tribal members while actions are implemented to benefit declining native fish stocks. Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.) Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

2004: Establish an experimental white sturgeon population outside the current occupied range. Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.) Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

2005: Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.) Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

2006: Monitor, evaluate, and report genetic variability and diversity of hatchery white sturgeon juveniles produced and wild broodstock spawned in the Kootenai Hatchery. (Recovery measure 2.23) (Addresses ISRP concerns about genetics.) Monitor and evaluate survival, condition, growth, movement, and habitat use of hatchery reared juvenile white sturgeon released into the Kootenai River. (Recovery measure 3.31) Monitor and evaluate hatchery water quality (Recovery measure 2.22) Monitor and evaluate animal health of hatchery reared juvenile white sturgeon (Recovery measure 2.24.242)

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

62 **LAMPREY RESEARCH AND RESTORATION (BPA)**

2003: 1) Increase larval abundance in the Umatilla River. 2) Determine reproductive success of adult lamprey outplants. 3) Estimate the numbers of adult lampreys entering the Umatilla River.

2004: 1) Increase larval abundance in the Umatilla River. 2) Determine reproductive success of adult lamprey outplants. 3) Estimate the numbers of adult lampreys entering the Umatilla River.

2005: 1) Increase larval abundance in the Umatilla River. 2) Determine reproductive success of adult lamprey outplants. 3) Estimate the numbers of adult lampreys entering the Umatilla River.

2006: 1) Increase larval abundance in the Umatilla River. 2) Determine reproductive success of adult lamprey outplants. 3) Estimate the numbers of adult lampreys entering the Umatilla River.

1. Configure Dam Facilities to Enhance Juvenile & Adult Fish Passage & Survival

1.1 Mainstem juvenile passage enhancement

335 **Ice Harbor Survival Studies (CORPS)**

2003: 12000000

1.4 Project configuration RME

335 **Ice Harbor Survival Studies (CORPS)**

2003: 12000000

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

65 **Listed Stock Chinook Salmon Escapement Monitoring (BPA)**

2003: 1) Coordinate the Chinook Salmon Adult Abundance Monitoring Project with appropriate Tribal, state and federal management agencies and independent scientists in the Snake River basin. 2) Implement the selected technology to determine spawner abundance at the Secersh River and Lake and Marsh creeks.

2004: 1) Coordinate the Chinook Salmon Adult Abundance Monitoring Project with appropriate Tribal, state and federal management agencies and independent scientists in the Snake River basin. 2) Implement the selected technology to determine spawner abundance at the Secersh River and Lake and Marsh creeks.

2005: 1) Coordinate the Chinook Salmon Adult Abundance Monitoring Project with appropriate Tribal, state and federal management agencies and independent scientists in the Snake River basin. 2) Implement the selected technology to determine spawner abundance at the Secersh River and Lake and Marsh creeks.

2006: 1) Coordinate the Chinook Salmon Adult Abundance Monitoring Project with appropriate Tribal, state and federal management agencies and independent scientists in the Snake River basin. 2) Implement the selected technology to determine spawner abundance at the Secersh River and Lake and Marsh creeks.

130 **Wind River Watershed USGS (BPA)**

2003: Same as 02 but more focus on other tributaries than Trout Creek. 1) monitor physical habitat conditions and natural production of juvenile steelhead, focused on the parr stage of the life history for the entire portion of Trout Creek accessible to steelhead above the smolt trap at Hemlock Lake and select areas in other tributaries where stream and riparian enhancement actions are planned 2) Assist with the technical part of watershed planning at Watershed Council and TAC meetings 3) Assist with assessment efforts using EDT

2004: Same as 03 but more focus on other tributaries than Trout Creek. 1) monitor physical habitat conditions and natural production of juvenile steelhead, focused on the parr stage of the life history for the entire portion of Trout Creek accessible to steelhead above the smolt trap at Hemlock Lake and select areas in other tributaries where stream and riparian enhancement actions are planned 2) Assist with the technical part of watershed planning at Watershed Council and TAC meetings 3) Assist with assessment efforts using EDT

1.a System Monitoring

9 **Yakima/Klickitat Fisheries Project Monitoring And Evaluation - Yakima Subbasin (BPA)**

2003: 1. Natural Production - Develop and implement methods of detecting indices of increasing natural production, as well as methods of detecting a realized increase in natural production, with specified statistical power. 2. Harvest - Develop methods to detect increases in harvest of YKFP targeted stocks. 3. Genetics - Develop methods of detecting significiant pre- and post- supplementation genetic changes in targeted stocks as reflected by changes in extinction risk, within-stock genetic variability, between-stock genetic variability, and domestication. 4. Ecological Interactions - Determine if impacts to non-target taxa can be kept within specified biological limits, and determine if biotic interactions limit ability of supplementation to increase natural production.

2004: Natural Production - Develop and implement methods of detecting indices of increasing natural production, as well as methods of detecting a realized increase in natural production, with specified statistical power. 2. Harvest - Develop methods to detect increases in harvest of YKFP targeted stocks. 3. Genetics - Develop methods of detecting significiant pre- and post- supplementation genetic changes in targeted stocks as reflected by changes in extinction risk, within-stock genetic variability, between-stock genetic variability, and domestication. 4. Ecological Interactions - Determine if impacts to non-target taxa can be kept within specified biological limits, and determine if biotic interactions limit ability of supplementation to increase natural production.

2005: 1. Natural Production - develop and implement methods of detecting indices of increasing natural production, as well as methods of detecting a realized increase in natural production, with specified statistical power. 2. Harvest - Develop methods to detect increases in harvest of YKFP targeted stocks. 3. Genetics - Develop methods of detecting significiant pre- and post- supplementation genetic changes in targeted stocks as reflected by changes in extinction risk, within-stock genetic variability, between-stock genetic variability, and domestication. 4. Ecological Interactions - Determine if impacts to non-target taxa can be kept within specified biological limits, and determine if biotic interactions limit ability of supplementation to increase natural production.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

34 **Yakima/Klickitat Fisheries Project Monitoring And Evaluation (Klickitat Only) (BPA)**

2003: Monitoring And Evaluation - Juvenile salmonid population surveys. Mobile juvenile monitoring - rotary traps. Spawning ground surveys. Scale analysis. Sediment impact analysis on habitat. Fish passage "obstruction" inventory; Water quality inventory; habitat production assessment. Genetics - DNA data collection/analysis on steelhead. Ecological Interactions - Pathogen sampling. Reports

2004: Monitoring And Evaluation - Juvenile salmonid population surveys. Mobile juvenile monitoring - rotary traps. Spawning ground surveys. Scale analysis. Sediment impact analysis on habitat. Fish passage "obstruction" inventory; Water quality inventory; habitat production assessment. Genetics - DNA data collection/analysis on steelhead. Ecological Interactions - Pathogen sampling. Reports

45 **Umatilla Natural Production M&E (BPA)**

2003: 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Annual report

2004: 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Annual report

2005: 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Annual report

2006: 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Annual report

2007: 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Annual report

53 **Walla Walla Natural Production M&E (BPA)**

2003: 1) Monitor adult steelhead and bull trout spawning; 2) Estimate run timing and survival of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Monitor adult steelhead and bull trout movements throughout the Walla Walla basin with radio telementry techniques; 7) Annual report.

2004: 1) Monitor adult steelhead and bull trout spawning; 2) Estimate run timing and survival of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Monitor adult steelhead and bull trout movements throughout the Walla Walla basin with radio telementry techniques; 7) Annual report.

2005: 1) Monitor adult steelhead and bull trout spawning; 2) Estimate run timing and survival of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Monitor adult steelhead and bull trout movements throughout the Walla Walla basin with radio telementry techniques; 7) Annual report.

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2007: 1) Monitor adult steelhead and bull trout spawning; 2) Estimate run timing and survival of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Monitor adult steelhead and bull trout movements throughout the Walla Walla basin with radio telementry techniques; 7) Annual report.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

97 **Analyze the Persistence and Spatial Dynamics of Snake River Chinook Salmon (BPA)**

2003: Map the annual distribution of chinook salmon redds in the study area. Map the distribution of potential chinook salmon spawning areas. Describe spawning patch quality. Relate the location, size, and quality of spawning patches to basin geomorphic features. Evaluate the influence of patch size, quality, and context on the distribution of chinook salmon redds.

2004: Map the annual distribution of chinook salmon redds in the study area. Map the distribution of potential chinook salmon spawning areas. Describe spawning patch quality. Relate the location, size, and quality of spawning patches to basin geomorphic features. Evaluate the influence of patch size, quality, and context on the distribution of chinook salmon redds.

232 **Smolt Monitoring by Federal and Non-Federal Agencies (BPA)**

2003: 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

2004: 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

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2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

238 **Monitoring Smolt Migrations of Wild Snake River Spring/Summer Salmon (BPA)**

2003: Similar scope of work expected.

2004: Similar scope of work expected.

2005: Similar scope of work expected.

2006: Similar scope of work expected.

2007: Similar scope of work expected.

242 **Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers□Short BPA Title: Survival Estimates Through Dams and Reservoirs (BPA)**

2003: 1.0 Provide estimates of survival for releases of juvenile yearling spring/summer chinook salmon and steelhead (both hatchery and wild) through the Snake and Lower Columbia Rivers using the SR Model. 2.0 Provide estimate of survival from McNary Dam tailrace to John Day tailrace for juvenile subyearling fall chinook salmon during the summer migration. 3.0 Provide estimate of survival and travel time for subyearling fall chinook salmon from Pittsburg Landing and Billy Creek on the free flowing Snake River through the lower Snake River. 4.0 Extend survival estimates to Bonneville Dam tailrace using PIT tag pair trawl detections. 5.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

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2006: 1.0 Provide estimates of survival for releases of juvenile yearling spring/summer chinook salmon and steelhead (both hatchery and wild) through the Snake and Lower Columbia Rivers using the SR Model. 2.0 Estimate survival from McNary Dam tailrace to John Day tailrace for juvenile subyearling fall chinook salmon during the summer migration. 3.0 Extend survival estimates to Bonneville Dam tailrace using PIT tag pair trawl detections. 4.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

2007: 1.0 Provide estimates of survival for releases of juvenile yearling spring/summer chinook salmon and steelhead (both hatchery and wild) through the Snake and Lower Columbia Rivers using the SR Model. 2.0 Estimate survival from McNary Dam tailrace to John Day tailrace for juvenile subyearling fall chinook salmon during the summer migration. 3.0 Extend survival estimates to Bonneville Dam tailrace using PIT tag pair trawl detections. 4.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

245 **Title Present Scope: Imnaha River Smolt Monitoring Program. Title for proposed expanded scope: Imnaha Smolt Survival and Smolt to Adult Return Rate Quantification (BPA)**

2003: Same as 2002 unless scope of project changes. 1) Determine juvenile spring emigration timing of chinook salmon and steelhead smolts from the Imnaha River by operating permanent emigrant Imnaha River trap at rkm 7, March 15 to June 5, in cooperation with LSRCP. 2) Determine the emigration timing of previously PIT tagged natural and hatchery chinook salmon and steelhead smolts through interrogations at the lower Imnaha River trap. 3) Provide smolt-monitoring information to the FPC, LSRCP, NEOH M&E and PTAGIS. 4) In cooperation with the LSRCP program, PIT tag over 27,000 smolts to determine the arrival timing, travel time, and survival of natural and hatchery chinook salmon and steelhead released in the Imnaha River subbasin to Lower Granite, Little Goose, Lower Monumental, and McNary Dams.

2004: Same as 2002 unless scope of project changes. 1) Determine juvenile spring emigration timing of chinook salmon and steelhead smolts from the Imnaha River by operating permanent emigrant Imnaha River trap at rkm 7, March 15 to June 5, in cooperation with LSRCP. 2) Determine the emigration timing of previously PIT tagged natural and hatchery chinook salmon and steelhead smolts through interrogations at the lower Imnaha River trap. 3) Provide smolt-monitoring information to the FPC, LSRCP, NEOH M&E and PTAGIS. 4) In cooperation with the LSRCP program, PIT tag over 27,000 smolts to determine the arrival timing, travel time, and survival of natural and hatchery chinook salmon and steelhead released in the Imnaha River subbasin to Lower Granite, Little Goose, Lower Monumental, and McNary Dams.

2005: Same as 2002 unless scope of project changes. 1) Determine juvenile spring emigration timing of chinook salmon and steelhead smolts from the Imnaha River by operating permanent emigrant Imnaha River trap at rkm 7, March 15 to June 5, in cooperation with LSRCP. 2) Determine the emigration timing of previously PIT tagged natural and hatchery chinook salmon and steelhead smolts through interrogations at the lower Imnaha River trap. 3) Provide smolt-monitoring information to the FPC, LSRCP, NEOH M&E and PTAGIS. 4) In cooperation with the LSRCP program, PIT tag over 27,000 smolts to determine the arrival timing, travel time, and survival of natural and hatchery chinook salmon and steelhead released in the Imnaha River subbasin to Lower Granite, Little Goose, Lower Monumental, and McNary Dams.

2006: Same as 2002 unless scope of project changes. 1) Determine juvenile spring emigration timing of chinook salmon and steelhead smolts from the Imnaha River by operating permanent emigrant Imnaha River trap at rkm 7, March 15 to June 5, in cooperation with LSRCP. 2) Determine the emigration timing of previously PIT tagged natural and hatchery chinook salmon and steelhead smolts through interrogations at the lower Imnaha River trap. 3) Provide smolt-monitoring information to the FPC, LSRCP, NEOH M&E and PTAGIS. 4) In cooperation with the LSRCP program, PIT tag over 27,000 smolts to determine the arrival timing, travel time, and survival of natural and hatchery chinook salmon and steelhead released in the Imnaha River subbasin to Lower Granite, Little Goose, Lower Monumental, and McNary Dams.

2007: Same as 2002 unless scope of project changes. 1) Determine juvenile spring emigration timing of chinook salmon and steelhead smolts from the Imnaha River by operating permanent emigrant Imnaha River trap at rkm 7, March 15 to June 5, in cooperation with LSRCP. 2) Determine the emigration timing of previously PIT tagged natural and hatchery chinook salmon and steelhead smolts through interrogations at the lower Imnaha River trap. 3) Provide smolt-monitoring information to the FPC, LSRCP, NEOH M&E and PTAGIS. 4) In cooperation with the LSRCP program, PIT tag over 27,000 smolts to determine the arrival timing, travel time, and survival of natural and hatchery chinook salmon and steelhead released in the Imnaha River subbasin to Lower Granite, Little Goose, Lower Monumental, and McNary Dams.

261 **Idaho Natural Production Monitoring and Evaluation - previously 1989-098-00 (BPA)**

2003: More work expected from budget projection -includes construction

2004: Generally similar expected from budget projection

2005: Generally similar expected from budget projection

2006: Less work expected from budget projection

459 **TRT Digital Satellite Imagery Project (USBR)**

2003: Imagery Analysis

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

484 **Evaluate Factors Limiting Columbia River Gorge Chum Salmon Populations (BPA)**

2003: 1) Assess movement of adults among three spawning areas; 2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; 4) Evaluate habitat parameters associated with chum salmon spawning success

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2005: 1) Assess movement of adults among three spawning areas; 2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; 4) Evaluate habitat parameters associated with chum salmon spawning success

2006: 1) Assess movement of adults among three spawning areas; 2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; 4) Evaluate habitat parameters associated with chum salmon spawning success

2007: 1) Assess movement of adults among three spawning areas; 2) Determine abundance and baseline biological characteristics of adult chum salmon; 3) Determine chum smolt production and abundance in Hardy Creek, Hardy Creek spawning channel, Hamilton Springs, and main stem Columbia River near Ives Island; 4) Evaluate habitat parameters associated with chum salmon spawning success

1.b Tributary Habitat Monitoring

131 **Wind River Watershed Monitoring (BPA)**

2003: 1) Conduct rotary screw trap capture using 4 screw traps for sampling to derive annual estimates of steelhead smolt production in the Wind River Subbasin. 2) Adult sampling using fish traps at Sheppard Falls and Hemlock Dam

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2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

141 **Salmonid Productivity, Escapement, Trend, and Habitat Monitoring in the Oregon Portion of the Columbia Plateau Province (BPA)**

2003: 1. Measurements of abundance and distribution of juvenile O. mykiss in the John Day subbasin and potentially in the Deschutes, Umatilla, and Walla Walla subbasins. 2. Measurements of some salmonid habitat attributes in the John Day subbasin and potentially in the Deschutes, Umatilla, and Walla Walla subbasins. 2. Estimates of total steelhead redds in the John Day subbasin and potentially in the Deschutes, Umatilla, and Walla Walla subbasins. 3. Estimate of steelhead smolt production in the upper mainstem and Middle Fork John Day. 4. Up to 5,000 steelhead smolts PIT-tagged in the John Day subbasin. 5. Age distribution of steelhead smolts based on scale analysis. 6. Estimates of John Day steelhead smolt migration timing and survival past Columbia R. dams.

2004: 1. Measurements of abundance and distribution of juvenile O. mykiss in the John Day subbasin and potentially in the Deschutes, Umatilla, and Walla Walla subbasins. 2. Measurements of some salmonid habitat attributes in the John Day subbasin and potentially in the Deschutes, Umatilla, and Walla Walla subbasins. 2. Estimates of total steelhead redds in the John Day subbasin and potentially in the Deschutes, Umatilla, and Walla Walla subbasins. 3. Estimate of steelhead smolt production in the upper mainstem, Middle Fork, and North Fork John Day. 4. Up to 5,000 steelhead smolts PIT-tagged in the John Day subbasin. 5. Age distribution of steelhead smolts based on scale analysis. 6. Estimates of John Day steelhead smolt migration timing and survival past Columbia R. dams.

2005: 1. Measurements of abundance and distribution of juvenile O. mykiss in the John Day subbasin and potentially in the Deschutes, Umatilla, and Walla Walla subbasins. 2. Measurements of some salmonid habitat attributes in the John Day subbasin and potentially in the Deschutes, Umatilla, and Walla Walla subbasins. 2. Estimates of total steelhead redds in the John Day subbasin and potentially in the Deschutes, Umatilla, and Walla Walla subbasins. 3. Estimate of steelhead smolt production in the upper mainstem, Middle Fork, and North Fork John Day. 4. Up to 5,000 steelhead smolts PIT-tagged in the John Day subbasin. 5. Age distribution of steelhead smolts based on scale analysis. 6. Estimates of John Day steelhead smolt migration timing and survival past Columbia R. dams.

159 **Snake River Sockeye Salmon Habitat and Limmological Research (BPA)**

2003: Limnological monitoring in Redfish, Pettit, Alturas, and Stanley lakes, ID. Fertilize Redfish, Pettit, and Alturas lakes. Monitoring of O. nerka population characteristics and densities in Sawtooth Valley lakes.

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2007: Limnological monitoring in Redfish, Pettit, Alturas, and Stanley lakes, ID. Fertilize Redfish, Pettit, and Alturas lakes. Monitoring of O. nerka population characteristics and densities in Sawtooth Valley lakes.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

245 **Title Present Scope: Imnaha River Smolt Monitoring Program. Title for proposed expanded scope: Imnaha Smolt Survival and Smolt to Adult Return Rate Quantification (BPA)**

2003: Same as 2002 unless scope of project changes. 1) Determine juvenile spring emigration timing of chinook salmon and steelhead smolts from the Imnaha River by operating permanent emigrant Imnaha River trap at rkm 7, March 15 to June 5, in cooperation with LSRCP. 2) Determine the emigration timing of previously PIT tagged natural and hatchery chinook salmon and steelhead smolts through interrogations at the lower Imnaha River trap. 3) Provide smolt-monitoring information to the FPC, LSRCP, NEOH M&E and PTAGIS. 4) In cooperation with the LSRCP program, PIT tag over 27,000 smolts to determine the arrival timing, travel time, and survival of natural and hatchery chinook salmon and steelhead released in the Imnaha River subbasin to Lower Granite, Little Goose, Lower Monumental, and McNary Dams.

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2006: Same as 2002 unless scope of project changes. 1) Determine juvenile spring emigration timing of chinook salmon and steelhead smolts from the Imnaha River by operating permanent emigrant Imnaha River trap at rkm 7, March 15 to June 5, in cooperation with LSRCP. 2) Determine the emigration timing of previously PIT tagged natural and hatchery chinook salmon and steelhead smolts through interrogations at the lower Imnaha River trap. 3) Provide smolt-monitoring information to the FPC, LSRCP, NEOH M&E and PTAGIS. 4) In cooperation with the LSRCP program, PIT tag over 27,000 smolts to determine the arrival timing, travel time, and survival of natural and hatchery chinook salmon and steelhead released in the Imnaha River subbasin to Lower Granite, Little Goose, Lower Monumental, and McNary Dams.

2007: Same as 2002 unless scope of project changes. 1) Determine juvenile spring emigration timing of chinook salmon and steelhead smolts from the Imnaha River by operating permanent emigrant Imnaha River trap at rkm 7, March 15 to June 5, in cooperation with LSRCP. 2) Determine the emigration timing of previously PIT tagged natural and hatchery chinook salmon and steelhead smolts through interrogations at the lower Imnaha River trap. 3) Provide smolt-monitoring information to the FPC, LSRCP, NEOH M&E and PTAGIS. 4) In cooperation with the LSRCP program, PIT tag over 27,000 smolts to determine the arrival timing, travel time, and survival of natural and hatchery chinook salmon and steelhead released in the Imnaha River subbasin to Lower Granite, Little Goose, Lower Monumental, and McNary Dams.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

265 **Assess Fish Habitat and Salmonids in the Walla Walla Watershed in Washington (BPA)**

2003: Similar expected from budget projection - All work is conducted in the WA portion of the Walla Walla watershed. 1) Assess fish habitat conditions for anadromous and resident salmonids: a) Operate flow monitoring devices, b) Collect water temperature data, c) Collect water quality data, d) Conduct habitat surveys. 2) Determine salmonid distribution, relative abunndance, and habitat use: a) Conduct spawning surveys for steelhead and bull trout, b) Electrofish or snorkel. 3) Identify genetic stocks of steehead and bull trout: a) collect fin clips from adults at trap site, b) Collect fin clips from juveniles at traps and during sampling, c) Conduct DNA analysis, d) plan for broodstock development for steelhead. 4) Annual report

2004: Similar expected from budget projection - All work is conducted in the WA portion of the Walla Walla watershed. 1) Assess fish habitat conditions for anadromous and resident salmonids: a) Operate flow monitoring devices, b) Collect water temperature data, c) Collect water quality data, d) Conduct habitat surveys. 2) Determine salmonid distribution, relative abunndance, and habitat use: a) Conduct spawning surveys for steelhead and bull trout, b) Electrofish or snorkel. 3) Identify genetic stocks of steehead and bull trout: a) collect fin clips from adults at trap site, b) Collect fin clips from juveniles at traps and during sampling, c) Conduct DNA analysis, d) plan for broodstock development for steelhead. 4) Annual report

2005: Similar expected from budget projection - All work is conducted in the WA portion of the Walla Walla watershed. 1) Assess fish habitat conditions for anadromous and resident salmonids: a) Operate flow monitoring devices, b) Collect water temperature data, c) Collect water quality data, d) Conduct habitat surveys. 2) Determine salmonid distribution, relative abunndance, and habitat use: a) Conduct spawning surveys for steelhead and bull trout, b) Electrofish or snorkel. 3) Identify genetic stocks of steehead and bull trout: a) collect fin clips from adults at trap site, b) Collect fin clips from juveniles at traps and during sampling, c) Conduct DNA analysis, d) plan for broodstock development for steelhead. 4) Annual report

2006: Similar expected from budget projection - All work is conducted in the WA portion of the Walla Walla watershed. 1) Assess fish habitat conditions for anadromous and resident salmonids: a) Operate flow monitoring devices, b) Collect water temperature data, c) Collect water quality data, d) Conduct habitat surveys. 2) Determine salmonid distribution, relative abunndance, and habitat use: a) Conduct spawning surveys for steelhead and bull trout, b) Electrofish or snorkel. 3) Identify genetic stocks of steehead and bull trout: a) collect fin clips from adults at trap site, b) Collect fin clips from juveniles at traps and during sampling, c) Conduct DNA analysis, d) plan for broodstock development for steelhead. 4) Annual report

286 **ISCO Water Sampling and Macroinvertebrate Samples (BPA)**

2003: Monitoring of 3 sites on Asotin Creek for suspended sediment and macroinvertebrates.

2004: Monitoring of 3 sites on Asotin Creek for suspended sediment and macroinvertebrates.

2005: Monitoring of 3 sites on Asotin Creek for suspended sediment and macroinvertebrates.

2006: Monitoring of 3 sites on Asotin Creek for suspended sediment and macroinvertebrates.

2007: Monitoring of 3 sites on Asotin Creek for suspended sediment and macroinvertebrates.

452 **Fish Production/Flow Analysis (USBR)**

2003: Methodology Report

453 **John Day Basin Aerial Imagery Project (USBR)**

2003: Imagery analysis

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

1.c Hydro Corridor Monitoring

67 **Monitoring and Evaluation of Yearling Snake River Fall Chinook Salmon Outplanted Upstream of Lower Granite Dam (BPA)**

2003: 1) Monitor, evaluate, and compare pre-release and release conditions of yearling hatchery fall chinook released at the Pittsburg Landing, Big Canyon Creek, and Captain John Rapids acclimation facilities with on-station releases at LFH; 2) Monitor, evaluate, and compare post-release behavior, migration timing, and survival of yearling fall chinook released at Pittsburg Landing, Big Canyon Creek, Captain John Rapids, and LFH; 3) Monitor and compare contribution and distribution of adult returns and smolt-to-adult survivals of yearling fall chinook released from Pittsburg Landing, Captain John Rapids, Big Canyon Creek, and LFH; 4)

2004: 1) Monitor, evaluate, and compare pre-release and release conditions of yearling hatchery fall chinook released at the Pittsburg Landing, Big Canyon Creek, and Captain John Rapids acclimation facilities with on-station releases at LFH; 2) Monitor, evaluate, and compare post-release behavior, migration timing, and survival of yearling fall chinook released at Pittsburg Landing, Big Canyon Creek, Captain John Rapids, and LFH; 3) Monitor and compare contribution and distribution of adult returns and smolt-to-adult survivals of yearling fall chinook released from Pittsburg Landing, Captain John Rapids, Big Canyon Creek, and LFH; 4)

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2006: 1) Monitor, evaluate, and compare pre-release and release conditions of yearling hatchery fall chinook released at the Pittsburg Landing, Big Canyon Creek, and Captain John Rapids acclimation facilities with on-station releases at LFH; 2) Monitor, evaluate, and compare post-release behavior, migration timing, and survival of yearling fall chinook released at Pittsburg Landing, Big Canyon Creek, Captain John Rapids, and LFH; 3) Monitor and compare contribution and distribution of adult returns and smolt-to-adult survivals of yearling fall chinook released from Pittsburg Landing, Captain John Rapids, Big Canyon Creek, and LFH; 4)

68 **Evaluate Spawning Of Fall Chinook And Chum Salmon Just Below The Four Lowermost Columbia River Mainstem Dams (BPA)**

2003: 1) Search for evidence of fall chinook and chum spawning below Bonneville, The Dalles, John Day, and McNary dams. Collect biological data to profile stock and determine stock origins. 2) Non-index spawning ground surveys for Columbia River chum salmon from The Dalles Dam downstream; 3) Juvenile fall chinook and chum populations rearing below Bonneville Dam, specifically near Ives and Pierce Islands, will be sampled to determine emergence timing and size and time of emigration from local rearing areas and rearing distribution. Stranding of juveniles will be documented and the feasibility of marking juvenile fall chinook for the purpose of determining juvenile to adult survival rates will be investigated; 4) Describe physical habitat use and requirements for fall chinook andchum salmon in the Columbia River downstream from Bonneville, The Dalles, John Day, and McNary dams by determining the relationship between river discharge and the location and quantity of spawning and rearing habitat. Evaluate the effect of various operational scenarios on spawning and rearing habitat, and recommend operational scenarios that will maintain or enhance the quality and/or quantity of the habitat

2004: 1) Search for evidence of fall chinook and chum spawning below Bonneville, The Dalles, John Day, and McNary dams. Collect biological data to profile stock and determine stock origins. 2) Non-index spawning ground surveys for Columbia River chum salmon from The Dalles Dam downstream; 3) Juvenile fall chinook and chum populations rearing below Bonneville Dam, specifically near Ives and Pierce Islands, will be sampled to determine emergence timing and size and time of emigration from local rearing areas and rearing distribution. Stranding of juveniles will be documented and the feasibility of marking juvenile fall chinook for the purpose of determining juvenile to adult survival rates will be investigated; 4) Describe physical habitat use and requirements for fall chinook andchum salmon in the Columbia River downstream from Bonneville, The Dalles, John Day, and McNary dams by determining the relationship between river discharge and the location and quantity of spawning and rearing habitat. Evaluate the effect of various operational scenarios on spawning and rearing habitat, and recommend operational scenarios that will maintain or enhance the quality and/or quantity of the habitat

2005: 1) Search for evidence of fall chinook and chum spawning below Bonneville, The Dalles, John Day, and McNary dams. Collect biological data to profile stock and determine stock origins. 2) Non-index spawning ground surveys for Columbia River chum salmon from The Dalles Dam downstream; 3) Juvenile fall chinook and chum populations rearing below Bonneville Dam, specifically near Ives and Pierce Islands, will be sampled to determine emergence timing and size and time of emigration from local rearing areas and rearing distribution. Stranding of juveniles will be documented and the feasibility of marking juvenile fall chinook for the purpose of determining juvenile to adult survival rates will be investigated; 4) Describe physical habitat use and requirements for fall chinook andchum salmon in the Columbia River downstream from Bonneville, The Dalles, John Day, and McNary dams by determining the relationship between river discharge and the location and quantity of spawning and rearing habitat. Evaluate the effect of various operational scenarios on spawning and rearing habitat, and recommend operational scenarios that will maintain or enhance the quality and/or quantity of the habitat

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

74 **Genetic sex of chinook salmon in the Columbia River Basin (BPA)**

2003: Completion report

122 **Second-Tier Database Support (BPA)**

2003: 1. Provide optional information integration services to FWP and ESA participants. 2. Provide Internet-based electronic data integration services to generate data sets needed by FWP and ESA modeling, monitoring, and evaluation efforts. 3. Provide monitoring and evaluation products and services (via the Internet) on single and associated FWP-funded and ESA-mandated activities. Support Federal abilities to independently make and evaluate decisions committing federal resources. 4. Provide the public Internet interface to DART (Data Access in Real-Time). DART permits interactive selection of data items, time frame, presentation format, etc. from an integrated subset of historical and current fishery, hydraulic, project operation, and environmental information vital to year-round planning and in-season decision-making for operation of the Federal Columbia River Power System. 5. Real-time operations support. 6. Tool development. 7. Planning and coordination

2004: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2005: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2006: 1. DART operations and regional support. 2. Real-time operations. 3. Tool development. 4. Planning and coordination

2007: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

232 **Smolt Monitoring by Federal and Non-Federal Agencies (BPA)**

2003: 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

2004: 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

2005: 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

2006: 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

2007: 1) Conduct annual Smolt Monitoring Program (SMP) at seven mainstem Snake and Columbia River dams, Lewiston Snake River trap, Lower Grande Ronde trap, and White Bird trap on the Salmon River. (Note: Imnaha River trap is another SMP site operated by the Nez Perce Tribe (NPT) under Project 1997-015-01). 2) Perform PIT tagging of ~25,500 juvenile fish at five hatcheries and upload data files to PSMFC databsase (USFWS tagging support component). 3) Transmit daily juvenile fish passage, sampling, marking, and other biological and hydrological data to online databases at Fish Passage Center (FPC) and Pacific States Marine Fisheries Commission (PSMFC) for distribution region wide. 4) Comply with ESA Section 10 sampling and reporting requirements at all monitiring sites. 5) Participating agencies and organizations prepare and submit annual reports to PSMFC summarizing SMP activities and data collected at each monitoring site for use in compiling FPC annaul report.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

233 **Assessment of Smolt Condition: Biological and Environmental Interactions (BPA)**

2003: 1.0 Provide science support and technical assistance to federal, state, and Tribal fishery agencies to determine if juvenile salmonid condition is determined by biological and environmental interactions that are distinguishable from genetic effects. 2.0 Determine if juvenile salmonids of the same genetic origin show differential growth and condition under varied controlled environmental conditions. 3.0 Determine if juvenile salmonids of the same species of different genetic origin show differential growth and condition under similar environmental conditions. 4.0 Determine if juvenile salmonids of the same genetic origin show differential emigration behavior or seawater survival when reared in different, controlled rearing environments. 5.0 Technology transfer through technical reports, publications and organization and conduct of annual smolt workshop.

2004: More work expected from budget projection.

2005: Considerably more work expected from budget projection.

2006: Less work expected from budget projection.

2007: Less work expected from budget projection.

234 **Statistical Support for Salmonid Survival Studies (BPA)**

2003: 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2004: Expected to continue similar to 2003 - 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

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2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

240 **Monitoring and Evaluation Statistical Support (BPA)**

2003: 1.0 Provide in-season statistical support. 1.1 Provide real-time run-timing predictions. 1.2 Provide annual review of run-timing predictions. 2.0 Statistical analysis of historical tagging data. 2.1 Provide post-season outmigration estimation. 2.2 Provide analysis of smolt-to-adult ratios (SARs). 2.3 Sample size software. 3.0 Provide statistical support for region. 3.1 Provide statistical consultation. 3.2 Continued statistical evaluation of performance standards to improve decision analysis for assessing RPA compliance.

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2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

242 **Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers□Short BPA Title: Survival Estimates Through Dams and Reservoirs (BPA)**

2003: 1.0 Provide estimates of survival for releases of juvenile yearling spring/summer chinook salmon and steelhead (both hatchery and wild) through the Snake and Lower Columbia Rivers using the SR Model. 2.0 Provide estimate of survival from McNary Dam tailrace to John Day tailrace for juvenile subyearling fall chinook salmon during the summer migration. 3.0 Provide estimate of survival and travel time for subyearling fall chinook salmon from Pittsburg Landing and Billy Creek on the free flowing Snake River through the lower Snake River. 4.0 Extend survival estimates to Bonneville Dam tailrace using PIT tag pair trawl detections. 5.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

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542 **Juvenile Salmon Temperature Studies (CORPS)**

2003: Temperature Impacts Biological Indicators

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

1.d Estuary/Ocean Monitoring

247 **Ocean Survival of Salmonids (BPA)**

2003: 1. Long-term observations - a. Conduct mesoscale surveys, b. Predator and forage fish surveys, c. Top trophic predators, d. Salmon growth, e. Endocrine assessment, f. Genetic stock assessment, g. Pathogen assessment, h. Prey resources & stomach content. 2. Fine scale process studies - a. Role of fronts, b. Diel studies, c. Pycnocline studies , d. Estury fronts. 3. Spatial and temporal features of the Columbia River plume - a. Develop and calibrate plume circulation model, b. Field demonstration of plume model, c. Construct simulation database, d. Develop physical habitat metrics, e. Circulation forcasts, f. Physical habitats using historical and remote data. 4. Coupled physical-biological modeling - a. Adapt and validate LTM for plume, b. Develop and validate spatially explicit model, c. Reconstruct spatial-temporal histories. 5. Develop management scenarios - a. Define management scenarios, b. Construct simulation datbase, c. Analysis of management scenarios.

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325 **Estuary PIT tag recovery (CORPS)**

2003: Annual Report and PITAGIS upload.

2004: Annual Report and PITAGIS upload.

2005: Annual Report and PITAGIS upload.

2006: Annual Report and PITAGIS upload.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

1. Status Monitoring

2.b Habitat Actions

144 **John Day Recovery Monitoring (BPA)**

2003: 1. Digital maps of the riparian areas, wetland features, stream channel boundaries etc. for mainstem streams within the John Day subbasin. 2. Several new water quality monitoring stations on mainstem streams in the John Day subbasin. 3. 10 piezometers installed on Oxbow Ranch. 4. Surface flow, temperature, and groundwater elevation data to compare flood vs. sprinkler irrigation operations.

2004: 1. Surface flow, temperature, and groundwater elevation data to compare flood vs. sprinkler irrigation operations. 2. Data analysis and annual report of results.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

2. Action Effectiveness Research

48 **Grande Ronde Supplementation - Lostine River Spring Chinook M&E (BPA)**

2003: 1) Monitor and evaluate juvenile hatchery production and performance; 2) Collect baseline information on environmental conditions in the Lostine River; 3) Collect and analyze information on abundance, genetic and life history characteristics of the Lostine River wild spring chinook salmon population and compare with that of the returning hatchery fish; 4) Monitor and evaluate the operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River; 5) Annual report

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2006: 1) Monitor and evaluate juvenile hatchery production and performance; 2) Collect baseline information on environmental conditions in the Lostine River; 3) Collect and analyze information on abundance, genetic and life history characteristics of the Lostine River wild spring chinook salmon population and compare with that of the returning hatchery fish; 4) Monitor and evaluate the operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River; 5) Annual report

2007: 1) Monitor and evaluate juvenile hatchery production and performance; 2) Collect baseline information on environmental conditions in the Lostine River; 3) Collect and analyze information on abundance, genetic and life history characteristics of the Lostine River wild spring chinook salmon population and compare with that of the returning hatchery fish; 4) Monitor and evaluate the operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River; 5) Annual report

67 **Monitoring and Evaluation of Yearling Snake River Fall Chinook Salmon Outplanted Upstream of Lower Granite Dam (BPA)**

2003: 1) Monitor, evaluate, and compare pre-release and release conditions of yearling hatchery fall chinook released at the Pittsburg Landing, Big Canyon Creek, and Captain John Rapids acclimation facilities with on-station releases at LFH; 2) Monitor, evaluate, and compare post-release behavior, migration timing, and survival of yearling fall chinook released at Pittsburg Landing, Big Canyon Creek, Captain John Rapids, and LFH; 3) Monitor and compare contribution and distribution of adult returns and smolt-to-adult survivals of yearling fall chinook released from Pittsburg Landing, Captain John Rapids, Big Canyon Creek, and LFH; 4)

2004: 1) Monitor, evaluate, and compare pre-release and release conditions of yearling hatchery fall chinook released at the Pittsburg Landing, Big Canyon Creek, and Captain John Rapids acclimation facilities with on-station releases at LFH; 2) Monitor, evaluate, and compare post-release behavior, migration timing, and survival of yearling fall chinook released at Pittsburg Landing, Big Canyon Creek, Captain John Rapids, and LFH; 3) Monitor and compare contribution and distribution of adult returns and smolt-to-adult survivals of yearling fall chinook released from Pittsburg Landing, Captain John Rapids, Big Canyon Creek, and LFH; 4)

2005: 1) Monitor, evaluate, and compare pre-release and release conditions of yearling hatchery fall chinook released at the Pittsburg Landing, Big Canyon Creek, and Captain John Rapids acclimation facilities with on-station releases at LFH; 2) Monitor, evaluate, and compare post-release behavior, migration timing, and survival of yearling fall chinook released at Pittsburg Landing, Big Canyon Creek, Captain John Rapids, and LFH; 3) Monitor and compare contribution and distribution of adult returns and smolt-to-adult survivals of yearling fall chinook released from Pittsburg Landing, Captain John Rapids, Big Canyon Creek, and LFH; 4)

2006: 1) Monitor, evaluate, and compare pre-release and release conditions of yearling hatchery fall chinook released at the Pittsburg Landing, Big Canyon Creek, and Captain John Rapids acclimation facilities with on-station releases at LFH; 2) Monitor, evaluate, and compare post-release behavior, migration timing, and survival of yearling fall chinook released at Pittsburg Landing, Big Canyon Creek, Captain John Rapids, and LFH; 3) Monitor and compare contribution and distribution of adult returns and smolt-to-adult survivals of yearling fall chinook released from Pittsburg Landing, Captain John Rapids, Big Canyon Creek, and LFH; 4)

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

2. Action Effectiveness Research

95 **Characterize and quantify residual steelhead in the Clearwater River, Idaho (BPA)**

2003: 1. Determine if a relation exists between in-river conditions (flow and temperature) to emigration success, residualism rate, and persistence of residual steelhead.

1.b Tributary Habitat Monitoring

144 **John Day Recovery Monitoring (BPA)**

2003: 1. Digital maps of the riparian areas, wetland features, stream channel boundaries etc. for mainstem streams within the John Day subbasin. 2. Several new water quality monitoring stations on mainstem streams in the John Day subbasin. 3. 10 piezometers installed on Oxbow Ranch. 4. Surface flow, temperature, and groundwater elevation data to compare flood vs. sprinkler irrigation operations.

2004: 1. Surface flow, temperature, and groundwater elevation data to compare flood vs. sprinkler irrigation operations. 2. Data analysis and annual report of results.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

2. Action Effectiveness Research

1.c Hydro Corridor Monitoring

242 **Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers□Short BPA Title: Survival Estimates Through Dams and Reservoirs (BPA)**

2003: 1.0 Provide estimates of survival for releases of juvenile yearling spring/summer chinook salmon and steelhead (both hatchery and wild) through the Snake and Lower Columbia Rivers using the SR Model. 2.0 Provide estimate of survival from McNary Dam tailrace to John Day tailrace for juvenile subyearling fall chinook salmon during the summer migration. 3.0 Provide estimate of survival and travel time for subyearling fall chinook salmon from Pittsburg Landing and Billy Creek on the free flowing Snake River through the lower Snake River. 4.0 Extend survival estimates to Bonneville Dam tailrace using PIT tag pair trawl detections. 5.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

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2.a Hydro Actions

59 **The effects of summer flow augmentation on the migratory behavior and survival of juvenile Snake River fall chinook salmon (BPA)**

2003: 1) Provide information to fishery managers to maximize the effectiveness of summer flow augmentation. 2) Understand how summer flow augmentation affects water temperature, water velocity, juvenile fall chinook salmon migratory behavior, and juvenile fall chinook survival salmon in Lower Granite Reservoir.

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2005: 1) Provide information to fishery managers to maximize the effectiveness of summer flow augmentation.

2006: 1) Provide information to fishery managers to maximize the effectiveness of summer flow augmentation.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

2. Action Effectiveness Research

77 **Investigating passage of ESA-listed juvenile fall chinook salmon at Lower Granite Dam during winter when the fish bypass system is inoperable (BPA)**

2003: 1) Refine non-lethal methods for identifying the age at saltwater entry for unmarked Snake River fall chinook salmon adults collected at Lower Granite from 1998 to 2001, and then assess the importance of the holdover strategy to adult returns to the Snake; 2) Determine if holdover wild fall chinook salmon smolts pass Lower Granite Dam during the winter when the fish bypass systems are shut down.

2004: 1) Refine non-lethal methods for identifying the age at saltwater entry for unmarked Snake River fall chinook salmon adults collected at Lower Granite from 1998 to 2001, and then assess the importance of the holdover strategy to adult returns to the Snake; 2) Determine if holdover wild fall chinook salmon smolts pass Lower Granite Dam during the winter when the fish bypass systems are shut down.

2005: 1) Refine non-lethal methods for identifying the age at saltwater entry for unmarked Snake River fall chinook salmon adults collected at Lower Granite from 1998 to 2001, and then assess the importance of the holdover strategy to adult returns to the Snak

2006: 1) Refine non-lethal methods for identifying the age at saltwater entry for unmarked Snake River fall chinook salmon adults collected at Lower Granite from 1998 to 2001, and then assess the importance of the holdover strategy to adult returns to the Snak

122 **Second-Tier Database Support (BPA)**

2003: 1. Provide optional information integration services to FWP and ESA participants. 2. Provide Internet-based electronic data integration services to generate data sets needed by FWP and ESA modeling, monitoring, and evaluation efforts. 3. Provide monitoring and evaluation products and services (via the Internet) on single and associated FWP-funded and ESA-mandated activities. Support Federal abilities to independently make and evaluate decisions committing federal resources. 4. Provide the public Internet interface to DART (Data Access in Real-Time). DART permits interactive selection of data items, time frame, presentation format, etc. from an integrated subset of historical and current fishery, hydraulic, project operation, and environmental information vital to year-round planning and in-season decision-making for operation of the Federal Columbia River Power System. 5. Real-time operations support. 6. Tool development. 7. Planning and coordination

2004: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2005: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2006: 1. DART operations and regional support. 2. Real-time operations. 3. Tool development. 4. Planning and coordination

2007: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

2. Action Effectiveness Research

234 **Statistical Support for Salmonid Survival Studies (BPA)**

2003: 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2004: Expected to continue similar to 2003 - 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

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2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

2. Action Effectiveness Research

240 **Monitoring and Evaluation Statistical Support (BPA)**

2003: 1.0 Provide in-season statistical support. 1.1 Provide real-time run-timing predictions. 1.2 Provide annual review of run-timing predictions. 2.0 Statistical analysis of historical tagging data. 2.1 Provide post-season outmigration estimation. 2.2 Provide analysis of smolt-to-adult ratios (SARs). 2.3 Sample size software. 3.0 Provide statistical support for region. 3.1 Provide statistical consultation. 3.2 Continued statistical evaluation of performance standards to improve decision analysis for assessing RPA compliance.

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2.b Habitat Actions

198 **Lostine River/Carcass Supplementation and Evaluation (BPA)**

2003: Project complete

269 **Nutrient enhancement studies (BPA)**

2003: Continued implementation and reporting.

2004: All experiments are expected to be completed and reports or peer-reviewed publications completed.

454 **Pushup Dam Research - John Day Basin (USBR)**

2003: Monitor, analyze, evaluate effects of push up dam removal

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

2. Action Effectiveness Research

2.d Hatchery Actions

9 **Yakima/Klickitat Fisheries Project Monitoring And Evaluation - Yakima Subbasin (BPA)**

2003: 1. Natural Production - Develop and implement methods of detecting indices of increasing natural production, as well as methods of detecting a realized increase in natural production, with specified statistical power. 2. Harvest - Develop methods to detect increases in harvest of YKFP targeted stocks. 3. Genetics - Develop methods of detecting significiant pre- and post- supplementation genetic changes in targeted stocks as reflected by changes in extinction risk, within-stock genetic variability, between-stock genetic variability, and domestication. 4. Ecological Interactions - Determine if impacts to non-target taxa can be kept within specified biological limits, and determine if biotic interactions limit ability of supplementation to increase natural production.

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34 **Yakima/Klickitat Fisheries Project Monitoring And Evaluation (Klickitat Only) (BPA)**

2003: Monitoring And Evaluation - Juvenile salmonid population surveys. Mobile juvenile monitoring - rotary traps. Spawning ground surveys. Scale analysis. Sediment impact analysis on habitat. Fish passage "obstruction" inventory; Water quality inventory; habitat production assessment. Genetics - DNA data collection/analysis on steelhead. Ecological Interactions - Pathogen sampling. Reports

2004: Monitoring And Evaluation - Juvenile salmonid population surveys. Mobile juvenile monitoring - rotary traps. Spawning ground surveys. Scale analysis. Sediment impact analysis on habitat. Fish passage "obstruction" inventory; Water quality inventory; habitat production assessment. Genetics - DNA data collection/analysis on steelhead. Ecological Interactions - Pathogen sampling. Reports

45 **Umatilla Natural Production M&E (BPA)**

2003: 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Annual report

2004: 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Annual report

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2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

2. Action Effectiveness Research

50 **Grande Ronde Supplementation - Catharine Creek and Upper Grande Ronde M&E (BPA)**

2003: 1) Evaluate acclimated juvenile spring chinook salmon performance; 2) Evaluate life history differences between wild and hatchery-origin (F1) adult spring chinook salmon; 3) Describe life history characteristics and genetics of adult summer steelhead collected at weirs; 4) Evaluate environmental factors affecting migration or survival of anadromous salmonids; 5) Evaluate weir effects on fish migration or behavior; 6) Annual report.

2004: 1) Evaluate acclimated juvenile spring chinook salmon performance; 2) Evaluate life history differences between wild and hatchery-origin (F1) adult spring chinook salmon; 3) Describe life history characteristics and genetics of adult summer steelhead collected at weirs; 4) Evaluate environmental factors affecting migration or survival of anadromous salmonids; 5) Evaluate weir effects on fish migration or behavior; 6) Annual report.

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2006: 1) Evaluate acclimated juvenile spring chinook salmon performance; 2) Evaluate life history differences between wild and hatchery-origin (F1) adult spring chinook salmon; 3) Describe life history characteristics and genetics of adult summer steelhead collected at weirs; 4) Evaluate environmental factors affecting migration or survival of anadromous salmonids; 5) Evaluate weir effects on fish migration or behavior; 6) Annual report.

2007: 1) Evaluate acclimated juvenile spring chinook salmon performance; 2) Evaluate life history differences between wild and hatchery-origin (F1) adult spring chinook salmon; 3) Describe life history characteristics and genetics of adult summer steelhead collected at weirs; 4) Evaluate environmental factors affecting migration or survival of anadromous salmonids; 5) Evaluate weir effects on fish migration or behavior; 6) Annual report.

66 **Spawning Distribution of Fall Chinook Salmon Released as Yearlings above Lower Granite Dam (BPA)**

2003: 1. Provide researchers and managers with accurate counts of fall chinook salmon redds upriver of Lower Granite Dam

2004: 1. Provide researchers and managers with accurate counts of fall chinook salmon redds upriver of Lower Granite Dam

2005: 1. Provide researchers and managers with accurate counts of fall chinook salmon redds upriver of Lower Granite Dam

2006: 1. Provide researchers and managers with accurate counts of fall chinook salmon redds upriver of Lower Granite Dam

170 **New Perce Tribal Hatchery; M & E (BPA)**

2003: 1) Determine if program targets for contribution rate of hatchery fish are being achieved 2) Determine the increases in natural production that results from supplementation of chinook salmon & relate them to limiting factors 3) Estimate ecological & genetic impacts to fish populations 4) Determine how harvest opportunities can be optimized 5) Effectively communicate M&E program approach & findings to resource mngrs

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2007: 1) Determine if program targets for contribution rate of hatchery fish are being achieved 2) Determine the increases in natural production that results from supplementation of chinook salmon & relate them to limiting factors 3) Estimate ecological & genetic impacts to fish populations 4) Determine how harvest opportunities can be optimized 5) Effectively communicate M&E program approach & findings to resource mngrs

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

2. Action Effectiveness Research

275 **Investigate Early Life History of Spring Chinook Salmon and Summer Steelhead in the Grande Ronde River Basin (BPA)**

2003: Investigate the abundance, migration patterns, survival, and life history strategies of spring chinook salmon and summer steelhead from distinct populations and implement fish population and habitat monitoring in the Grande Ronde and Imnaha River basins.

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2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

3. Critical Uncertainty Research

3.a Hydro Research

122 **Second-Tier Database Support (BPA)**

2003: 1. Provide optional information integration services to FWP and ESA participants. 2. Provide Internet-based electronic data integration services to generate data sets needed by FWP and ESA modeling, monitoring, and evaluation efforts. 3. Provide monitoring and evaluation products and services (via the Internet) on single and associated FWP-funded and ESA-mandated activities. Support Federal abilities to independently make and evaluate decisions committing federal resources. 4. Provide the public Internet interface to DART (Data Access in Real-Time). DART permits interactive selection of data items, time frame, presentation format, etc. from an integrated subset of historical and current fishery, hydraulic, project operation, and environmental information vital to year-round planning and in-season decision-making for operation of the Federal Columbia River Power System. 5. Real-time operations support. 6. Tool development. 7. Planning and coordination

2004: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2005: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2006: 1. DART operations and regional support. 2. Real-time operations. 3. Tool development. 4. Planning and coordination

2007: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

234 **Statistical Support for Salmonid Survival Studies (BPA)**

2003: 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

2004: Expected to continue similar to 2003 - 1.0 Maintainence of statistical software and Internet access. 1.1 Maintain SURPH.2 software 1.2 Maintain USER.2 software. 1.3 Respond to user requests. 1.4 Adapt software to changing computing environment. 2.0 Improvements to statistical software. 1.1 Expand USER.2 capabilities 1.2 Expand data input capabilities. 1.3 Expand SURPH.2 capabilities. 3.0 Provide guidance on adult survival studies to FWP and Northwest fisheries community. 3.1 Adult PIT PIT-tag capabilities. 3.2 Adult radiotelemetry evaluations. 4.0 Evaluation of high-flow PIT-tag capabilities. 5.0 Provide technology transfer through the preparation of technical reports, publications in the professional literature, and statistical consulting to the fisheries community on tagging and fish tracking studies.

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2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

3. Critical Uncertainty Research

240 **Monitoring and Evaluation Statistical Support (BPA)**

2003: 1.0 Provide in-season statistical support. 1.1 Provide real-time run-timing predictions. 1.2 Provide annual review of run-timing predictions. 2.0 Statistical analysis of historical tagging data. 2.1 Provide post-season outmigration estimation. 2.2 Provide analysis of smolt-to-adult ratios (SARs). 2.3 Sample size software. 3.0 Provide statistical support for region. 3.1 Provide statistical consultation. 3.2 Continued statistical evaluation of performance standards to improve decision analysis for assessing RPA compliance.

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2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

3. Critical Uncertainty Research

242 **Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers□Short BPA Title: Survival Estimates Through Dams and Reservoirs (BPA)**

2003: 1.0 Provide estimates of survival for releases of juvenile yearling spring/summer chinook salmon and steelhead (both hatchery and wild) through the Snake and Lower Columbia Rivers using the SR Model. 2.0 Provide estimate of survival from McNary Dam tailrace to John Day tailrace for juvenile subyearling fall chinook salmon during the summer migration. 3.0 Provide estimate of survival and travel time for subyearling fall chinook salmon from Pittsburg Landing and Billy Creek on the free flowing Snake River through the lower Snake River. 4.0 Extend survival estimates to Bonneville Dam tailrace using PIT tag pair trawl detections. 5.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

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244 **Comparative Survival Rate Study (CSS) of Hatchery PIT Tagged Chinook & Comparative Survival Study BPA Short Title: PIT Tagging Spring/Summer Chinook in Hatcheries (BPA)**

2003: 1) Conduct PIT tag marking of ~497,500 hatchery and wild juvenile chinook salmon and steelhead at CSS study hatcheries and smolt traps, scan returning adults for PIT tags at CSS study hatcheries and weirs, and upload data files to PSMFC PTAGIS database. 2) Perform annual refinement and preparation of CSS study design that is responsive to any questions on analysis and review comments. 3) Analyze data and prepare Annual CSS Status Report in cooperation with the Fish Passage Center. 4) Comply with ESA Section 10 permit requirements.

2004: To be determined.

2005: To be determined.

2006: To be determined.

2007: To be determined.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

3. Critical Uncertainty Research

510 **Estuary study (CRFM) (CORPS)**

2003: research report

2004: research report

2005: research report

2006: research report

2007: research report

542 **Juvenile Salmon Temperature Studies (CORPS)**

2003: Temperature Impacts Biological Indicators

3.b Habitat Research

64 **Estimate production potential of fall chinook salmon in the Hanford Reach of the Columbia River (BPA)**

2003: 1) Define production potential of fall chinook salmon that spawn in the Hanford Reach. 2) Identify indicators of ecosystem health/processes for the Hanford Reach and evaluate existing conditions and capacity estimates relative to those indicators.

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3.d Hatchery Research

9 **Yakima/Klickitat Fisheries Project Monitoring And Evaluation - Yakima Subbasin (BPA)**

2003: 1. Natural Production - Develop and implement methods of detecting indices of increasing natural production, as well as methods of detecting a realized increase in natural production, with specified statistical power. 2. Harvest - Develop methods to detect increases in harvest of YKFP targeted stocks. 3. Genetics - Develop methods of detecting significiant pre- and post- supplementation genetic changes in targeted stocks as reflected by changes in extinction risk, within-stock genetic variability, between-stock genetic variability, and domestication. 4. Ecological Interactions - Determine if impacts to non-target taxa can be kept within specified biological limits, and determine if biotic interactions limit ability of supplementation to increase natural production.

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2005: 1. Natural Production - develop and implement methods of detecting indices of increasing natural production, as well as methods of detecting a realized increase in natural production, with specified statistical power. 2. Harvest - Develop methods to detect increases in harvest of YKFP targeted stocks. 3. Genetics - Develop methods of detecting significiant pre- and post- supplementation genetic changes in targeted stocks as reflected by changes in extinction risk, within-stock genetic variability, between-stock genetic variability, and domestication. 4. Ecological Interactions - Determine if impacts to non-target taxa can be kept within specified biological limits, and determine if biotic interactions limit ability of supplementation to increase natural production.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

3. Critical Uncertainty Research

34 **Yakima/Klickitat Fisheries Project Monitoring And Evaluation (Klickitat Only) (BPA)**

2003: Monitoring And Evaluation - Juvenile salmonid population surveys. Mobile juvenile monitoring - rotary traps. Spawning ground surveys. Scale analysis. Sediment impact analysis on habitat. Fish passage "obstruction" inventory; Water quality inventory; habitat production assessment. Genetics - DNA data collection/analysis on steelhead. Ecological Interactions - Pathogen sampling. Reports

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45 **Umatilla Natural Production M&E (BPA)**

2003: 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Annual report

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2007: 1) Monitor adult steelhead spawning; 2) Estimate run timing of juvenile steelhead using PIT tags; 3) Estimate juvenile salmonid abundance and rearing densities; 4) Monitor stream temperatures; 5) Determine age growth and life history characteristics of bull trout, salmon and steelhead in the Umatilla River Basin; 6) Annual report

48 **Grande Ronde Supplementation - Lostine River Spring Chinook M&E (BPA)**

2003: 1) Monitor and evaluate juvenile hatchery production and performance; 2) Collect baseline information on environmental conditions in the Lostine River; 3) Collect and analyze information on abundance, genetic and life history characteristics of the Lostine River wild spring chinook salmon population and compare with that of the returning hatchery fish; 4) Monitor and evaluate the operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River; 5) Annual report

2004: 1) Monitor and evaluate juvenile hatchery production and performance; 2) Collect baseline information on environmental conditions in the Lostine River; 3) Collect and analyze information on abundance, genetic and life history characteristics of the Lostine River wild spring chinook salmon population and compare with that of the returning hatchery fish; 4) Monitor and evaluate the operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River; 5) Annual report

2005: 1) Monitor and evaluate juvenile hatchery production and performance; 2) Collect baseline information on environmental conditions in the Lostine River; 3) Collect and analyze information on abundance, genetic and life history characteristics of the Lostine River wild spring chinook salmon population and compare with that of the returning hatchery fish; 4) Monitor and evaluate the operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River; 5) Annual report

2006: 1) Monitor and evaluate juvenile hatchery production and performance; 2) Collect baseline information on environmental conditions in the Lostine River; 3) Collect and analyze information on abundance, genetic and life history characteristics of the Lostine River wild spring chinook salmon population and compare with that of the returning hatchery fish; 4) Monitor and evaluate the operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River; 5) Annual report

2007: 1) Monitor and evaluate juvenile hatchery production and performance; 2) Collect baseline information on environmental conditions in the Lostine River; 3) Collect and analyze information on abundance, genetic and life history characteristics of the Lostine River wild spring chinook salmon population and compare with that of the returning hatchery fish; 4) Monitor and evaluate the operation of adult collection (weir and trap) for adverse impacts to resident and/or anadromous fish populations in the Lostine River; 5) Annual report

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

3. Critical Uncertainty Research

50 **Grande Ronde Supplementation - Catharine Creek and Upper Grande Ronde M&E (BPA)**

2003: 1) Evaluate acclimated juvenile spring chinook salmon performance; 2) Evaluate life history differences between wild and hatchery-origin (F1) adult spring chinook salmon; 3) Describe life history characteristics and genetics of adult summer steelhead collected at weirs; 4) Evaluate environmental factors affecting migration or survival of anadromous salmonids; 5) Evaluate weir effects on fish migration or behavior; 6) Annual report.

2004: 1) Evaluate acclimated juvenile spring chinook salmon performance; 2) Evaluate life history differences between wild and hatchery-origin (F1) adult spring chinook salmon; 3) Describe life history characteristics and genetics of adult summer steelhead collected at weirs; 4) Evaluate environmental factors affecting migration or survival of anadromous salmonids; 5) Evaluate weir effects on fish migration or behavior; 6) Annual report.

2005: 1) Evaluate acclimated juvenile spring chinook salmon performance; 2) Evaluate life history differences between wild and hatchery-origin (F1) adult spring chinook salmon; 3) Describe life history characteristics and genetics of adult summer steelhead collected at weirs; 4) Evaluate environmental factors affecting migration or survival of anadromous salmonids; 5) Evaluate weir effects on fish migration or behavior; 6) Annual report.

2006: 1) Evaluate acclimated juvenile spring chinook salmon performance; 2) Evaluate life history differences between wild and hatchery-origin (F1) adult spring chinook salmon; 3) Describe life history characteristics and genetics of adult summer steelhead collected at weirs; 4) Evaluate environmental factors affecting migration or survival of anadromous salmonids; 5) Evaluate weir effects on fish migration or behavior; 6) Annual report.

2007: 1) Evaluate acclimated juvenile spring chinook salmon performance; 2) Evaluate life history differences between wild and hatchery-origin (F1) adult spring chinook salmon; 3) Describe life history characteristics and genetics of adult summer steelhead collected at weirs; 4) Evaluate environmental factors affecting migration or survival of anadromous salmonids; 5) Evaluate weir effects on fish migration or behavior; 6) Annual report.

76 **Growth Rate Modulation in Spring Chinook Salmon Supplementation (BPA)**

2003: 1) Estimate incidence of precocious maturation and developmental □physiology in wild Yakima River spring chinook salmon; 2) Estimate Incidence of age 1+ precocious male maturation in the Yakima Hatchery population. 3) Experimental control of precocious maturation through growth rate modulation in a conservation hatchery.

2004: 1) Estimate incidence of precocious maturation and developmental □physiology in wild Yakima River spring chinook salmon; 2) Estimate Incidence of age 1+ precocious male maturation in the Yakima Hatchery population. 3) Experimental control of precocious maturation through growth rate modulation in a conservation hatchery.

2005: 1) Experimental control of precocious maturation through growth rate modulation in a conservation hatchery.

2006: 1) Experimental control of precocious maturation through growth rate modulation in a conservation hatchery.

156 **Genetic Monitoring and Evaluation Program for Supplemented Populations of Salmon and Steelhead in the Snake River Basin (BPA)**

2003: Collect genetic samples from wild and hatchery Snake River spring/summer chinook and steelhead populations, conduct genetic analyses, quantify genetic changes in hatchery populations, evaluate genetic impacts of supplementation on natural/wild stocks, estimate reproductive success of hatchery and wild steelhead, and prepare annual report

2004: Collect genetic samples from wild and hatchery Snake River spring/summer chinook and steelhead populations, conduct genetic analyses, quantify genetic changes in hatchery populations, evaluate genetic impacts of supplementation on natural/wild stocks, estimate reproductive success of hatchery and wild steelhead, and prepare annual report

2005: Same as 2001, except preparation of final report rather than annual report. Collect genetic samples from wild and hatchery Snake River spring/summer chinook and steelhead populations, conduct genetic analyses, quantify genetic changes in hatchery populations, evaluate genetic impacts of supplementation on natural/wild stocks, estimate reproductive success of hatchery and wild steelhead, and prepare annual report

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

3. Critical Uncertainty Research

162 **Research on Captive Broodstock Programs for Pacific Salmon (BPA)**

2003: Conduct research to improve natural reproductive success, improve olfactory imprinting, improve physiological development and maturation, improve in-culture survival of juveniles (prevention and control of disease), and evaluate inbreeding and inbreeding depression. Report results.

2004: Conduct research to improve natural reproductive success, improve olfactory imprinting, improve physiological development and maturation, improve in-culture survival of juveniles (prevention and control of disease), and evaluate inbreeding and inbreeding depression. Report results. □□□□□

2005: Conduct research to improve natural reproductive success, improve olfactory imprinting, improve physiological development and maturation, improve in-culture survival of juveniles (prevention and control of disease), and evaluate inbreeding and inbreeding depression. Report results.

163 **Analyzing Behavioral Changes During Salmonid Domestication (BPA)**

2003: Conduct behavorial and physiological tests of juveniles with varying histories of hatchery rearing, analyze data, and report results in Final Report

233 **Assessment of Smolt Condition: Biological and Environmental Interactions (BPA)**

2003: 1.0 Provide science support and technical assistance to federal, state, and Tribal fishery agencies to determine if juvenile salmonid condition is determined by biological and environmental interactions that are distinguishable from genetic effects. 2.0 Determine if juvenile salmonids of the same genetic origin show differential growth and condition under varied controlled environmental conditions. 3.0 Determine if juvenile salmonids of the same species of different genetic origin show differential growth and condition under similar environmental conditions. 4.0 Determine if juvenile salmonids of the same genetic origin show differential emigration behavior or seawater survival when reared in different, controlled rearing environments. 5.0 Technology transfer through technical reports, publications and organization and conduct of annual smolt workshop.

2004: More work expected from budget projection.

2005: Considerably more work expected from budget projection.

2006: Less work expected from budget projection.

2007: Less work expected from budget projection.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

3. Critical Uncertainty Research

256 **Idaho Supplementation Studies - salmon (BPA)**

2003: All IDFG data are collected in Crooked Fork Creek, Colt Killed (White Sand) Creek, Marsh Creek, Pahsimeroi Creek, Lemhi River, Upper Salmon River, Sotuh Fork Salmon River: 1) Estimate juvenile salmon outmigration; 2) Estimate survival to lower Snake River dams; 3) Conduct redd and carcass counts; 4) Release chinook: a) Smolts into upper Salmon River, East Fork Salmon River, South fork Salmon River, and Pahsimeroi River. b) summer parr into Pete King Creek, and Squaw Creek. c) presmolts into Red River and Crooked River. d) evaulate early rearing and volitional release in Stolle Ponds. 5) develop small-scale experiments to compare behavioral interactions between natural and hatchery fish with Univ. of ID. 6) Annual Report.

2004: All IDFG data are collected in Crooked Fork Creek, Colt Killed (White Sand) Creek, Marsh Creek, Pahsimeroi Creek, Lemhi River, Upper Salmon River, Sotuh Fork Salmon River: 1) Estimate juvenile salmon outmigration; 2) Estimate survival to lower Snake River dams; 3) Conduct redd and carcass counts; 4) Release chinook: a) Smolts into upper Salmon River, East Fork Salmon River, South fork Salmon River, and Pahsimeroi River. b) summer parr into Pete King Creek, and Squaw Creek. c) presmolts into Red River and Crooked River. d) evaulate early rearing and volitional release in Stolle Ponds. 5) develop small-scale experiments to compare behavioral interactions between natural and hatchery fish with Univ. of ID. 6) Annual Report.

2005: All IDFG data are collected in Crooked Fork Creek, Colt Killed (White Sand) Creek, Marsh Creek, Pahsimeroi Creek, Lemhi River, Upper Salmon River, Sotuh Fork Salmon River: 1) Estimate juvenile salmon outmigration; 2) Estimate survival to lower Snake River dams; 3) Conduct redd and carcass counts; 4) Release chinook: a) Smolts into upper Salmon River, East Fork Salmon River, South fork Salmon River, and Pahsimeroi River. b) summer parr into Pete King Creek, and Squaw Creek. c) presmolts into Red River and Crooked River. d) evaulate early rearing and volitional release in Stolle Ponds. 5) develop small-scale experiments to compare behavioral interactions between natural and hatchery fish with Univ. of ID. 6) Annual Report.

2006: All IDFG data are collected in Crooked Fork Creek, Colt Killed (White Sand) Creek, Marsh Creek, Pahsimeroi Creek, Lemhi River, Upper Salmon River, Sotuh Fork Salmon River: 1) Estimate juvenile salmon outmigration; 2) Estimate survival to lower Snake River dams; 3) Conduct redd and carcass counts; 4) Release chinook: a) Smolts into upper Salmon River, East Fork Salmon River, South fork Salmon River, and Pahsimeroi River. b) summer parr into Pete King Creek, and Squaw Creek. c) presmolts into Red River and Crooked River. d) evaulate early rearing and volitional release in Stolle Ponds. 5) develop small-scale experiments to compare behavioral interactions between natural and hatchery fish with Univ. of ID. 6) Annual Report.

257 **Idaho Supplementation Studies - salmon (BPA)**

2003: Similar expected from budget projection -All USFWS data are collected in Pete King Creek (PKC) and Clear Creek(CC): 1) Estimate juvenile salmon outmigration (CC). 2) Estimate survival to lower Snake River dams (CC). 3) Conduct redd and carcass counts (CC and PKC). 4) Release chinook: a) smolts into CC; b) summer parr into PKC. 5) Estimate parr abumdance (CC and PKC). 6) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 7) Annual Report.

2004: Similar expected from budget projection -All USFWS data are collected in Pete King Creek (PKC) and Clear Creek(CC): 1) Estimate juvenile salmon outmigration (CC). 2) Estimate survival to lower Snake River dams (CC). 3) Conduct redd and carcass counts (CC and PKC). 4) Release chinook: a) smolts into CC; b) summer parr into PKC. 5) Estimate parr abumdance (CC and PKC). 6) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 7) Annual Report.

2005: Similar expected from budget projection -All USFWS data are collected in Pete King Creek (PKC) and Clear Creek(CC): 1) Estimate juvenile salmon outmigration (CC). 2) Estimate survival to lower Snake River dams (CC). 3) Conduct redd and carcass counts (CC and PKC). 4) Release chinook: a) smolts into CC; b) summer parr into PKC. 5) Estimate parr abumdance (CC and PKC). 6) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 7) Annual Report.

2006: Similar expected from budget projection -All USFWS data are collected in Pete King Creek (PKC) and Clear Creek(CC): 1) Estimate juvenile salmon outmigration (CC). 2) Estimate survival to lower Snake River dams (CC). 3) Conduct redd and carcass counts (CC and PKC). 4) Release chinook: a) smolts into CC; b) summer parr into PKC. 5) Estimate parr abumdance (CC and PKC). 6) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 7) Annual Report.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

3. Critical Uncertainty Research

258 **Idaho Supplementation Studies - salmon (BPA)**

2003: Similar expected from budget projection - All NPT data are collected in: Secesh River (SER), Lake Creek (LAC), Lolo Creek (LLC), Newsome Creek (NC), Johnson Creek (JC), Fishing Creek (FC), Bear Creek (BC), Eldorado Creek (EC), Yoosa Creek (YC), Slate Creek (SLC) - 1) Estimate juvenile salmon outmigration (CC) - a) Operate traps in SR, b) Assist wth trap operation (LLC, NC, JC). 2) Estimate survival to lower Snake River dams (SR). 3) Conduct redd and carcass counts (SR, LAC, Jc, FC, BC, LLC, EC, YC, NC, SLC). 4) Estimate parr abumdance (CC and PKC). 5) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 6) Collect genetic samples. 7) Annual Report.

2004: Similar expected from budget projection - All NPT data are collected in: Secesh River (SER), Lake Creek (LAC), Lolo Creek (LLC), Newsome Creek (NC), Johnson Creek (JC), Fishing Creek (FC), Bear Creek (BC), Eldorado Creek (EC), Yoosa Creek (YC), Slate Creek (SLC) - 1) Estimate juvenile salmon outmigration (CC) - a) Operate traps in SR, b) Assist wth trap operation (LLC, NC, JC). 2) Estimate survival to lower Snake River dams (SR). 3) Conduct redd and carcass counts (SR, LAC, Jc, FC, BC, LLC, EC, YC, NC, SLC). 4) Estimate parr abumdance (CC and PKC). 5) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 6) Collect genetic samples. 7) Annual Report.

2005: Similar expected from budget projection - All NPT data are collected in: Secesh River (SER), Lake Creek (LAC), Lolo Creek (LLC), Newsome Creek (NC), Johnson Creek (JC), Fishing Creek (FC), Bear Creek (BC), Eldorado Creek (EC), Yoosa Creek (YC), Slate Creek (SLC) - 1) Estimate juvenile salmon outmigration (CC) - a) Operate traps in SR, b) Assist wth trap operation (LLC, NC, JC). 2) Estimate survival to lower Snake River dams (SR). 3) Conduct redd and carcass counts (SR, LAC, Jc, FC, BC, LLC, EC, YC, NC, SLC). 4) Estimate parr abumdance (CC and PKC). 5) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 6) Collect genetic samples. 7) Annual Report.

2006: Similar expected from budget projection - All NPT data are collected in: Secesh River (SER), Lake Creek (LAC), Lolo Creek (LLC), Newsome Creek (NC), Johnson Creek (JC), Fishing Creek (FC), Bear Creek (BC), Eldorado Creek (EC), Yoosa Creek (YC), Slate Creek (SLC) - 1) Estimate juvenile salmon outmigration (CC) - a) Operate traps in SR, b) Assist wth trap operation (LLC, NC, JC). 2) Estimate survival to lower Snake River dams (SR). 3) Conduct redd and carcass counts (SR, LAC, Jc, FC, BC, LLC, EC, YC, NC, SLC). 4) Estimate parr abumdance (CC and PKC). 5) Collect returning adults at Kooskia Hatchery and pass a portion upstream. 6) Collect genetic samples. 7) Annual Report.

259 **Idaho Supplementation Studies - salmon (BPA)**

2003: Similar expected from budget projection - All SBT data are collected in: W.Fork Yankee Fk Salmon R. (WF), E.Fork Salmon River (EF), Upper Salmon River (USR). 1) Estimate juvenile survival to lower Snake River dams (WF, EF). 2) Conduct redd and carcass counts. 3) Estimate parr abumdance. 4) Collect returning adults at weirs. 5) Annual Report

2004: Similar expected from budget projection - All SBT data are collected in: W.Fork Yankee Fk Salmon R. (WF), E.Fork Salmon River (EF), Upper Salmon River (USR). 1) Estimate juvenile survival to lower Snake River dams (WF, EF). 2) Conduct redd and carcass counts. 3) Estimate parr abumdance. 4) Collect returning adults at weirs. 5) Annual Report

2005: Similar expected from budget projection - All SBT data are collected in: W.Fork Yankee Fk Salmon R. (WF), E.Fork Salmon River (EF), Upper Salmon River (USR). 1) Estimate juvenile survival to lower Snake River dams (WF, EF). 2) Conduct redd and carcass counts. 3) Estimate parr abumdance. 4) Collect returning adults at weirs. 5) Annual Report

2006: Similar expected from budget projection - All SBT data are collected in: W.Fork Yankee Fk Salmon R. (WF), E.Fork Salmon River (EF), Upper Salmon River (USR). 1) Estimate juvenile survival to lower Snake River dams (WF, EF). 2) Conduct redd and carcass counts. 3) Estimate parr abumdance. 4) Collect returning adults at weirs. 5) Annual Report

273 **Develop Progeny Marker for Salmonids to Evaluate Supplementation (BPA)**

2003: 2) Test new marker on hatchery- raised, adult, females steelhead to determine whether it can be incorporated into the otoliths of their progeny. 3) Analyze data gathered from the experimental trials and report results.

2004: 2) Test new marker on hatchery- raised, adult, females steelhead to determine whether it can be incorporated into the otoliths of their progeny. 3) Analyze data gathered from the experimental trials and report results.

2005: Original project proposal suggests completion in 2004.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

3. Critical Uncertainty Research

278 **NATURES [Formerly Supplementation Fish Quality (Yakima)] (BPA)**

2003: Develop and evaluate fish culture techniques for a natural rearing enhancement system that increases the postrelease survival of artificially propagated salmon

2004: Develop and evaluate fish culture techniques for a natural rearing enhancement system that increases the postrelease survival of artificially propagated salmon

2005: Develop and evaluate fish culture techniques for a natural rearing enhancement system that increases the postrelease survival of artificially propagated salmon

2006: Develop and evaluate fish culture techniques for a natural rearing enhancement system that increases the postrelease survival of artificially propagated salmon

2007: Develop and evaluate fish culture techniques for a natural rearing enhancement system that increases the postrelease survival of artificially propagated salmon

280 **Reintroduction success of steelhead from captive propagation and release strategies (BPA)**

2003: Determine the relative reproductive performance of captively reared and sea-ranched (smolt- relaease) steelhead from anadromous and sequestered populations. Evaluate Adult Reproductive Success: -Quantify adult breeding behavior -Determine adult-to-parr reproduction success by DNA analysis. Evaluate Juvenile Behavioral Characteristics: -Quantify juvenile social behavior

3. Operate & Maintain Fish Passage Facilities to Enhance Fish Survival

3.a Hydro Research

372 **Multiple Bypass Accumulative Impacts (CORPS)**

2003: Data Review Report

2006: Final Report

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

5. Data Management System

122 **Second-Tier Database Support (BPA)**

2003: 1. Provide optional information integration services to FWP and ESA participants. 2. Provide Internet-based electronic data integration services to generate data sets needed by FWP and ESA modeling, monitoring, and evaluation efforts. 3. Provide monitoring and evaluation products and services (via the Internet) on single and associated FWP-funded and ESA-mandated activities. Support Federal abilities to independently make and evaluate decisions committing federal resources. 4. Provide the public Internet interface to DART (Data Access in Real-Time). DART permits interactive selection of data items, time frame, presentation format, etc. from an integrated subset of historical and current fishery, hydraulic, project operation, and environmental information vital to year-round planning and in-season decision-making for operation of the Federal Columbia River Power System. 5. Real-time operations support. 6. Tool development. 7. Planning and coordination

2004: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2005: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2006: 1. DART operations and regional support. 2. Real-time operations. 3. Tool development. 4. Planning and coordination

2007: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

123 **Pacific Northwest Hydropower Data Base and Analysis System (NWHS) (BPA)**

2003: Maintain the currency of NWHS project information through processing of all incoming FERC site or project update or new application information; Pursue quality improvement of the NWHS data base through the replacement of erroneous or missing data with valid information; Assist with requirements definition, design, development, and maintenance of system to track Performance Indicators as identified in the Direct Funding agreements for the FCRPS; Prepare and provide written monthly and annual reports.

2004: Maintain the currency of NWHS project information through processing of all incoming FERC site or project update or new application information; Pursue quality improvement of the NWHS data base through the replacement of erroneous or missing data with valid information; Assist with requirements definition, design, development, and maintenance of system to track Performance Indicators as identified in the Direct Funding agreements for the FCRPS; Prepare and provide written monthly and annual reports.

2005: Maintain the currency of NWHS project information through processing of all incoming FERC site or project update or new application information; Pursue quality improvement of the NWHS data base through the replacement of erroneous or missing data with valid information; Assist with requirements definition, design, development, and maintenance of system to track Performance Indicators as identified in the Direct Funding agreements for the FCRPS; Prepare and provide written monthly and annual reports.

2006: Maintain the currency of NWHS project information through processing of all incoming FERC site or project update or new application information; Pursue quality improvement of the NWHS data base through the replacement of erroneous or missing data with valid information; Assist with requirements definition, design, development, and maintenance of system to track Performance Indicators as identified in the Direct Funding agreements for the FCRPS; Prepare and provide written monthly and annual reports.

2007: Maintain the currency of NWHS project information through processing of all incoming FERC site or project update or new application information; Pursue quality improvement of the NWHS data base through the replacement of erroneous or missing data with valid information; Assist with requirements definition, design, development, and maintenance of system to track Performance Indicators as identified in the Direct Funding agreements for the FCRPS; Prepare and provide written monthly and annual reports.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

5. Data Management System

124 **Montana Natural Heritage Program (BPA)**

2003: 2003 Montana Natural Heritage Program Element Occurrence File of sensitive species data and other available species data with an updated data dictionary and other relevant documentation.

2004: 2004 Montana Natural Heritage Program Element Occurrence File of sensitive species data and other available species data with an updated data dictionary and other relevant documentation.

2005: 2005 Montana Natural Heritage Program Element Occurrence File of sensitive species data and other available species data with an updated data dictionary and other relevant documentation.

2006: 2006 Montana Natural Heritage Program Element Occurrence File of sensitive species data and other available species data with an updated data dictionary and other relevant documentation.

2007: 2007 Montana Natural Heritage Program Element Occurrence File of sensitive species data and other available species data with an updated data dictionary and other relevant documentation.

125 **Idaho Conservation Data Center (BPA)**

2003: 2003 Idaho Natural Heritage Program Occurrence File with updated data dictionary, and any other available data on sensitive species

2004: 2004 Idaho Natural Heritage Program Occurrence File with updated data dictionary, and any other available data on sensitive species

2005: 2005 Idaho Natural Heritage Program Occurrence File with updated data dictionary, and any other available data on sensitive species

2006: 2006 Idaho Natural Heritage Program Occurrence File with updated data dictionary, and any other available data on sensitive species

2007: 2007 Idaho Natural Heritage Program Occurrence File with updated data dictionary, and any other available data on sensitive species

2003-2007 Project Deliverables by Strategy and Substrategy

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5. Data Management System

242 **Estimate Survival for the Passage of Juvenile Salmonids Through Dams and Reservoirs of the Lower Snake and Columbia Rivers□Short BPA Title: Survival Estimates Through Dams and Reservoirs (BPA)**

2003: 1.0 Provide estimates of survival for releases of juvenile yearling spring/summer chinook salmon and steelhead (both hatchery and wild) through the Snake and Lower Columbia Rivers using the SR Model. 2.0 Provide estimate of survival from McNary Dam tailrace to John Day tailrace for juvenile subyearling fall chinook salmon during the summer migration. 3.0 Provide estimate of survival and travel time for subyearling fall chinook salmon from Pittsburg Landing and Billy Creek on the free flowing Snake River through the lower Snake River. 4.0 Extend survival estimates to Bonneville Dam tailrace using PIT tag pair trawl detections. 5.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

2004: 1.0 Provide estimates of survival for releases of juvenile yearling spring/summer chinook salmon and steelhead (both hatchery and wild) through the Snake and Lower Columbia Rivers using the SR Model. 2.0 Estimate survival from McNary Dam tailrace to John Day tailrace for juvenile subyearling fall chinook salmon during the summer migration. 3.0 Estimate survival and travel time for subyearling fall chinook from Pittsburg Landing and Billy Creek on the free flowing Snake River through the lower Snake River. 4.0 Extend survival estimates to Bonneville Dam tailrace using PIT tag pair trawl detections. 5.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

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2007: 1.0 Provide estimates of survival for releases of juvenile yearling spring/summer chinook salmon and steelhead (both hatchery and wild) through the Snake and Lower Columbia Rivers using the SR Model. 2.0 Estimate survival from McNary Dam tailrace to John Day tailrace for juvenile subyearling fall chinook salmon during the summer migration. 3.0 Extend survival estimates to Bonneville Dam tailrace using PIT tag pair trawl detections. 4.0 Provide information transfer to the fisheries community by presentations at meetings and workshops, by personal contact, by memorandum, by annual and final reports to the Bonneville Power Administration, and through peer-reviewed scientific publications.

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E

6. Regional Coordination

122 **Second-Tier Database Support (BPA)**

2003: 1. Provide optional information integration services to FWP and ESA participants. 2. Provide Internet-based electronic data integration services to generate data sets needed by FWP and ESA modeling, monitoring, and evaluation efforts. 3. Provide monitoring and evaluation products and services (via the Internet) on single and associated FWP-funded and ESA-mandated activities. Support Federal abilities to independently make and evaluate decisions committing federal resources. 4. Provide the public Internet interface to DART (Data Access in Real-Time). DART permits interactive selection of data items, time frame, presentation format, etc. from an integrated subset of historical and current fishery, hydraulic, project operation, and environmental information vital to year-round planning and in-season decision-making for operation of the Federal Columbia River Power System. 5. Real-time operations support. 6. Tool development. 7. Planning and coordination

2004: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2005: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

2006: 1. DART operations and regional support. 2. Real-time operations. 3. Tool development. 4. Planning and coordination

2007: 1. DART operations and regional support. 2. Real-time operations support. 3. Tool development. 4. Planning and coordination

1.a System Monitoring

458 **Effectiveness Monitoring Prioritization Project (USBR)**

2003: Identify and pritorize research projects

2003-2007 Project Deliverables by Strategy and Substrategy

RM&E Projects

2. Action Effectiveness Research

465 **AFEP; Kelt Research, Unaccounted Adult Loss and Straying and Marine Mammal Monitoring (CORPS)**

2003: Fund Kelt, Marine Mammal, and Adult General Migration

2004: Fund high priorities based on research results and review

2005: Fund high priorities based on research results and review

2006: Fund high priorities based on research results and review

2007: Fund high priorities based on research results and review

5. Data Management System

466 **Regional Database (CORPS)**

2003: Modifiecations of the selected WQ database.

2004: Enter one-fourth of district WQ data an post on Web.

2005: Enter one-third of district and division WQ data and post on Web.

2006: Enter three-quarters of all Corps WQ data an post on Web.

2007: All Corps WQ data in Corps database and accessable by Web.